EXHIBIT G

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May 9, 2019

Mr. Edward S. Bott
Greensfelder, Hemker & Gale, P.C.
10 South Broadway, Suite 2000
St. Louis, MO 63102

Re: *Susman, et al. v. The Goodyear Tire & Rubber Company*

Dear Mr. Bott:

I am an independent tire consultant and failure analyst of tires. I have a Bachelor of Science Degree in Mechanical Engineering from Fenn College of Engineering at Cleveland State University and graduated in 1971. I was employed as a tire engineer for more than 34 years by Continental Tire North America, Inc., previously known as The General Tire & Rubber Company and Continental General Tire, Inc. From September 1988 to January of 1993, I was the Director of Commercial Tire Technology. From 1993 until my retirement at the end of 2005, I was the Director of Product Analysis, where I was responsible for the failure analysis of tires manufactured by Continental Tire North America, Inc., and also analyzed other manufacturers' tires. During my career, I had responsibilities for the design, development, testing and the forensic analysis of tires. These responsibilities included design, development and testing of tires to ensure they complied with the performance requirements of the Department of Transportation and Continental Tire as well as various vehicle manufacturers.

All during my many years of tire development work, I was heavily involved with testing of tires and analyzing field performance of tires including tires returned and adjustment data. As part of this tire development responsibility, I was also involved with supplying and assisting tire companies in various other countries where General Tire and Continental Tire sold technology.

I am also a member of the Society of Automotive Engineers, the American Chemical Society and the American Society of Mechanical Engineers and I have represented Continental Tire at the Rubber Manufacturers Association and Tire and Rim Association.

I have been engaged as an independent consultant in the field of tire failure analysis for approximately (20) years for a wide variety of clients. In this regard, I have presented expert opinion testimony in cases in both federal and state courts throughout the United States. I have qualified as an expert in the field of tire failure analysis in both State and Federal Courts in California, Texas, Arizona, Florida, Maryland, North Carolina, South Carolina, Mississippi, Missouri, Georgia, Nebraska, Idaho, New York, Pennsylvania, Tennessee, Louisiana, Iowa, Oklahoma, Minnesota, Montana, Illinois, New Mexico, Wisconsin, Virginia and Arkansas. I have never been found to be unqualified as an expert in the field of tire failure analysis by any court.

On November 15, 2018, in Matthews, North Carolina, I personally examined the subject tire and wheel as well as the right front, left front and left rear companion tires and wheels. Additionally, I had X-Rays taken of the subject tire and the three companion tires. I have also reviewed various case specific materials including the protective order.

I am submitting this report pertaining to my findings, opinions and conclusions from my forensic examination of the subject tire and wheel, the three (3) companion tires and wheels, the X-Rays and my review of various case specific materials.

A. BACKGROUND

According to the State of Nebraska Investigator's Motor Vehicle Accident Report and other materials, a single vehicle accident occurred on May 1, 2015 at 6:57 am on Interstate 80, 2440 feet west of milepost 294.000 and three (3) miles east of the Shelton overpass in Hall County, Houston, Nebraska. The accident occurred 4.00 miles south and 2.00 miles east of Shelton, Nebraska. According to the report, a 2003 Chevrolet SC1 Pickup truck (VIN GCEC14X33Z115363) was being driven east bound on I-80 by Larry R. Blair when the right rear tire blew out. The Pickup truck crossed into the median and rolled. The vehicle came to rest on the west bound shoulder. Shane A. Loveland and Jacob S. Summers were occupants in the vehicle at the time of the accident.

B. DISCUSSION

A steel belted radial tire is a complex, laminate structure, typically containing twenty or more different components and a dozen or more different compounds. Steel belted radial tires are designed to carry vehicle loads in a particular application under a wide

variety of operating conditions. The performance and durability of any steel belted radial tire is dependent on the service conditions that the tire is exposed to in its use or application throughout the life of the tire. Additionally, the compounds and materials used in steel belted radial tires are designed to function at the typical operating temperatures created by the tire's in-service use. Because of its complex nature, a steel belted radial tire can fail due to a wide variety of severe or abusive service-related factors. Just because a tire fails or loses air does not mean a tire is defective.

It is widely recognized within the tire industry that tread/belt separations and/or detachments result from a wide variety of in-service conditions such as overdeflection (overloading and/or underinflation), unrepaired and improperly repaired punctures or injuries, wear into the belt structure, impact damage, road hazards, mounting damage, high speed operation, vehicle conditions like misalignment and other suspension issues, improper storage, and other types of in-service damage or abuse. Each of these service conditions normally changes the physical condition of the tire or otherwise leaves evidence of the underlying cause of the tread/belt separation.

It is not unusual for a tire or tires to become damaged and/or lose air and become flat during a crash sequence. Tires get cut, punctured, impacted, abraded and even ripped and torn apart from the surfaces and objects that they come into contact with during a crash sequence. A tire that looks like a tire blow out may actually have that appearance as a result of hitting an object, for example a tree or a guardrail, causing the tire to be cut and blow out. The tread and/or shoulder area of the tire can also get snagged on a bent piece of sheet metal during the crash sequence, ripping off a portion or all of the tread and belts and thus looking like, from even a short distance away, a tread/belt separation. Tires also lose air, as an example, when dirt and/or roadside debris get lodged between a wheel flange and a tire during a sideways slide off the road. A tire can also become unseated from the wheel flange and at times even be totally ripped off a wheel. As a last example, a tire that loses air during a crash sequence and then continues rotating or not rotating along the ground can experience very extensive run flat or other types of damage.

As a result, it is widely recognized within the tire industry that a physical examination of the tire is almost always necessary to determine the underlying cause of any tire disablement. Without a detailed forensic examination of the tire, it is rarely possible to reach an opinion or conclusion as to the cause of a tire disablement with any reasonable degree of engineering certainty.

C. TIRE MANUFACTURING (Generic Description)

RAW MATERIALS

The manufacture of a steel belted radial tire starts with the selection of raw materials including rubber, carbon black, process oil, chemicals, wire and textiles. The main ingredient, rubber, comes from synthetic rubber manufacturers and from natural rubber plantations. Rubber chemicals include sulfur, accelerators, process aids, antioxidants, antiozonants, zinc oxide, stearic acid and specialty chemicals.

High tensile single strand steel wire is used for beads. Brass-coated multi-strand steel wire is used for the belts and is obtained from outside suppliers.

RUBBER MIXING

Rubber, either synthetic or natural, is cut to obtain the proper weight and size for the mixer. After the rubber has been cut, it is transferred to the mixer weight scales. The various ingredients are weighed, measured and coded by type of compound to be mixed. There are specifications or formula cards for each type that is mixed.

After the batch has been assembled, it is taken by conveyor to the mixer. The operator then adds the various pre-weighed ingredients into the mixer in the order specified on the specification or formula card. The ingredients are then dispersed in the mixer via the use of two large rotors which rotate toward each other causing the ingredients to be blended in the rubber as the rotor tips smear these ingredients against the mixer walls. The batch is mixed for a specific sequence and length of time according to the specification, which varies from formula to formula, and is then dropped from the mixer onto a batch-off mill or extruder. This functions to sheet the rubber so it can be easily handled and also tends to cool and blend it. After the rubber is sheeted off, it passes through an anti-stick solution, then into drying racks and finally is automatically laid on a skid in one continuous strip. When one skid is full, it is moved aside, and another takes its place. This mixing process may be repeated one or more times, adding additional chemicals. Each batch of mixed rubber is used in a significant number of tires depending on the size and construction features of the tires being produced.

From this point on, tire manufacturing typically splits into three separate paths: construction of the beads, calendering of components, i.e. innerliner, ply and belt materials, and extrusion of the treads and other components on various extruders.

BEADS

Beads are processed from bronze plated high-tensile steel wire which is fed from a spool through a series of guides to the bead-building machine. It first passes through an extruder which insulates the wire with insulating rubber compound. The bead wire is wrapped around a mandrel for a specified number of turns per specified tire size and construction. Depending upon the bead construction, rubber bead fillers and fabric flippers may be added.

TIRE BUILDING

All parts of the tire are brought together in a tire assembly operation. The tire assembly is typically done in two stages. The first stage is called the carcass assembly stage and the second stage is called the tread/belt assembly stage.

The tire assembler at the initial assembly stage typically applies the sidewalls, the innerliner and the carcass material onto the carcass drum. Each of these components is individually placed and/or centered on the building drum. The machine stitchers engage and stitch across the components after the assembly of the appropriate components. Two steel beads are then placed on the ends of the drum over the components. After the beads have been placed, the carcass material that extends over the ends of the drum is turned up around the beads. Other components are applied as required.

At the belt/tread assembly stage, the assembler first applies and centers the two individual belts. The tread is then placed on top of the belts and centered. As this is accomplished, the drum rotates and stitches the belt/tread assembly.

The forming of the carcass assembly into the tread/belt assembly is the final step in the assembly of the uncured tire.

This is completed with the use of a transfer ring that transfers over the belt/tread drum which collapses as the transfer ring expands and picks up the belt/tread assembly.

The transfer ring with the tread belt assembly moves into position over the carcass. The carcass then forms up into belt/tread assembly. The transfer ring releases the belt/tread assembly and moves away.

Stitchers engage and stitch from tread center to tread ends. The tire is removed from the drum, visually inspected by assembler, and placed on a conveyor or in a cart. The assembler also performs a visual inspection of each component that goes into the tire.

TIRE CURING

The tire is cured for a prescribed length of time, depending upon its size and specification. In the tightly sealed mold, heat and pressure over time cause a chemical change, or vulcanization, which transforms the many parts of the tire into an integral unit. At the end of the curing cycle, the mold opens and the bladder collapses and retracts from the tire. The tire is moved to a conveyor behind the press line and carried to final inspection and testing.

The boundaries between the various material laminate layers that make up a tire do not "disappear" or "homogenize" during the curing process. As a result, process marks that are imparted onto the surfaces of the rubbers during manufacture are cured in the tire and do not disappear. Each layer of material in a tire is visibly distinct in a tire and these layers of materials as well as any manufacturing process marks can be seen very clearly when a tire is analyzed. A liner pattern mark left on the rubber from the protective liners used during the manufacturing process is one example of a manufacturing process mark that does not disappear during curing or vulcanization.

FINAL FINISH

In the final finish operation, the rubber vents and rubber flash are trimmed from the tire and each tire is inspected both visually and tactilely. The tire is then checked for uniformity and balance compliance.

As described above, tires are manufactured utilizing numerous manufacturing processes such as mixing of rubber, extrusion and calendering. Large quantities of tires are produced each week utilizing the same mixed rubber, calendered components and extruded components. As a result, if there was a problem with manufacturing or design of the tires such as inadequate compound development and/or improper mixing manufacturing procedures, more than one tire would be affected.

D. EXAMINATIONS

During my examination of the subject right rear tire and wheel and the three (3) companion tires and wheels, I took eighteen (18) pages of inspection notes as well as two hundred eighty-six (286) digital photographs.

SUBJECT RIGHT REAR TIRE AND WHEEL

The subject right rear tire was identified by information molded on the sidewalls as follows:

GOODYEAR WRANGLER HT
LT235/85R16 M+S
LOAD RANGE: E
MAXIMUM SINGLE LOAD: 3042 LBS @ 80 PSI
MAXIMAUM DUAL LOAD: 2778 LBS @ 80 PSI
TUBELESS RADIAL
TREAD: 4 PLY, 2 PLY POLYESTER, 2 PLY STEEL
SIDEWALL: 2 PLY POLYESTER
DOT: MDORNJHV244

The DOT number indicates the subject right rear tire was manufactured by The Goodyear Tire & Rubber Company in Gadsden, Alabama during the 24th week of 1994.

The subject right rear wheel was a 16 X 6.5J wheel with a Top Seal TR 600HP rubber snap-in valve. The subject tire and wheel were separate during the examination.

My examination of the subject right rear tire revealed, as presented to me, a detachment of a portion of the tread and top steel belt. The average remaining tread groove depth was 8.5/32nds of an inch. The tread hardness measured 84 Shore A Durometer. There were a few stones embedded in the tread sipes. The serial side (outboard) tread shoulder was abraded in various areas 360 degrees.

The tire was a black sidewall tire. The tire was mounted with the serial side, outboard. Using a clock face as an approximate locating reference system with the DOT serial number at 12:00, the valve was located at 8:00.

The tread and top steal belt was detached and missing from 4:00 on the serial side and 6:00 on the opposite serial side to 10:30 on the serial side and 12:30 on the opposite serial side.

The tread and top steel belt was partially detached from 10:30 on the serial side and 12:30 on the opposite serial side to 1:00 on the serial side and 12:40 on the opposite serial side where still attached. The serial side top belt cord ends from 10:30 on the serial side to 12:00 on the opposite serial side were loose, bare, rusted, bent and tangled.

Overall, steel belt cords were adhered in rubber. There were exposed steel cords that were rusted.

The rubber remaining over bottom steel belt in detached region of crown was worn with lateral abrasion marks.

At 11:50 in the crown region, there were four (4) broken bottom steel belt cords and filaments.

There was multi-level rubber tearing on all detached rubber surfaces. Additionally, there was multi-level tear lines along the serial side and opposite serial side bottom belt edge in detachment region.

There were a few permanent treads in bottom steel belt in detachment region.

There was a localized region of multi-level rubber (separation) tearing on serial side in rubber over bottom belt from 9:30 on the serial side to 12:00 on the opposite serial side extending to crown at 10:30.

There was a localized region of multi-level rubber (separation) tearing on the opposite serial side in rubber over bottom belt from 9:30 on the opposite serial side to 11:00 on the opposite serial side extending to crown at 10:15. There was polishing visible in the 10:15 opposite serial side region.

There was a one (1) inch wide wheel weight impression on the serial side at 4:00 with a corresponding one (1) inch wide wheel weight on the outboard wheel flange. There was also a 0.5-inch-wide wheel weight impression at 2:45 on the serial side with an outline of a wheel weight corresponding on the wheel flange.

A brown stain was on the serial side sidewall rubber in the 1:30 region. Additionally, the serial side sidewall was cut open in a circular fashion at 2:00.

At 5:15 on the opposite serial side, there was a one (1) inch wide wheel weight impression with a corresponding one (1) inch wide wheel weight on the inboard wheel flange. The opposite serials die sidewall was also dirty.

Rim line polishing to grooving was present 360 degrees on both sides of the tire.

The inner liner was sound.

There were no manufacturing anomalies in the subject tire.

There were polished worn flanges on the subject wheel.

COMPANION LEFT FRONT, RIGHT FRONT AND LEFT REAR TIRES AND WHEELS

COMPANION LEFT FRONT TIRE AND WHEEL

The companion left front tire was identified by information molded on the sidewalls as follows:

GOODYEAR WRANGLER HT
LT235/85R16 M+S
LOAD RANGE: E
MAXIMUM SINGLE LOAD: 3042 LBS @ 80 PSI
MAXIMAUM DUAL LOAD: 2778 LBS @ 80 PSI
TUBELESS RADIAL
TREAD: 4 PLY, 2 PLY POLYESTER, 2 PLY STEEL
SIDEWALL: 2 PLY POLYESTER
DOT: MDORNJHV234

The DOT number indicates that the companion left front tire was manufactured by The Goodyear Tire & Rubber Company in Gadsden, Alabama during the 23rd week of 1994.

The companion wheel was a 16 X 6.5J wheel with a Dill TR 600HP rubber snap-in valve. The companion tire and wheel were separate during the examination.

The average remaining tread groove depth was 9/32nds of an inch. The tread hardness measured 83 Shore A Durometer. There was some serial side and opposite serial side tread shoulder rounding 360 degrees. Additionally, there were a few stones embedded in the tread sipes. At 11:00 on the tread, there was a visible cosmetic opening of the leading edge of the tread splice.

The companion tire was mounted with the opposite serial side outboard with the valve at 12:30. The serial side sidewall was dirty.

On the opposite serial side, there were two (2), one (1) inch wide wheel weight impressions at 6:15 and 7:30 with corresponding one (1) inch wide wheel weights on the outboard wheel flange. On the serial side, there was a one (1) inch wide wheel weight impression at 8:45 with a corresponding wheel weight on the inboard wheel flange.

Rim line polishing to grooving was present 360 degrees on both sides of the tire.

The inner liner was sound.

There were polished worn flanges on the wheel.

COMPANION RIGHT FRONT TIRE AND WHEEL

The companion right front tire was identified by information molded on the sidewalls as follows:

GOODYEAR WRANGLER HT
LT235/85R16 M+S
LOAD RANGE: E
MAXIMUM SINGLE LOAD: 3042 LBS @ 80 PSI
MAXIMAUM DUAL LOAD: 2778 LBS @ 80 PSI
TUBELESS RADIAL
TREAD: 4 PLY, 2 PLY POLYESTER, 2 PLY STEEL
SIDEWALL: 2 PLY POLYESTER
DOT: MDORNJHV194

The DOT number indicates that the companion right front tire was manufactured by The Goodyear Tire & Rubber Company in Gadsden, Alabama during the 19th week of 1994.

The companion wheel was a 16 X 6.5J wheel with a Dill TR 600HP rubber snap-in valve. The companion tire and wheel were separate during the examination.

The average remaining tread groove depth was 8/32nds of an inch. The tread hardness measured 84 Shore A Durometer. There was some serial side and opposite serial side tread shoulder rounding 360 degrees. Additionally, there were a few stones embedded in the tread sipes. The serial side (outboard) tread shoulder was abraded 360 degrees.

The serial side sidewall was dirty.

On the serial side, there were two (2), one (1) inch wide wheel weight impressions at 1:45 and 2:30 with corresponding one (1) inch wide wheel weights on the outboard wheel flange. On the opposite serial side, there was a one (1) inch wide wheel weight impression at 5:15 with a corresponding wheel weight on the inboard wheel flange.

There was a deep gouge in the opposite serial side rim line region at approximately 9:00 with a corresponding bend on the outboard wheel flange. On the opposite serial side bead at 5:15, the bead toe was torn.

Rim line polishing to grooving was present 360 degrees on both sides of the tire.

The inner liner was sound.

There were polished worn flanges on the wheel.

COMPANION LEFT REAR TIRE AND WHEEL

The companion left rear tire was identified by information molded on the sidewalls as follows:

GOODYEAR WRANGLER HT
LT235/85R16 M+S
LOAD RANGE: E
MAXIMUM SINGLE LOAD: 3042 LBS @ 80 PSI
MAXIMAUM DUAL LOAD: 2778 LBS @ 80 PSI
TUBELESS RADIAL
TREAD: 4 PLY, 2 PLY POLYESTER, 2 PLY STEEL
SIDEWALL: 2 PLY POLYESTER
DOT: MDORNJHV234

The DOT number indicates that the companion left rear tire was manufactured by The Goodyear Tire & Rubber Company in Gadsden, Alabama during the 23rd week of 1994.

The companion wheel was a 16 X 6.5J wheel with a Dill TR 600HP rubber snap-in valve. The companion tire and wheel were separate during the examination.

The average remaining tread groove depth was 7.5/32nds of an inch. The tread hardness measured 83 Shore A Durometer. There were a few stones embedded in the tread sipes. Between 4:00 and 4:30 in the bottom of the opposite serial side tread groove, there was a three (3) inch long cut.

The opposite serial side was mounted outboard with the valve located at 8:30. The serial side sidewall was dirty.

On the serial side, there was a one (1) inch wide wheel weight impression at 1:45 with a corresponding one (1) inch wide wheel weight on the inboard wheel flange. On the opposite serial side, there was a one (1) inch wide wheel weight impression at 3:45 with a corresponding wheel weight on the inboard wheel flange. There was also a 0.5 inch wide wheel weight impression and an outline of a wheel weight at 6:00 on the outboard wheel flange.

Rim line polishing to grooving was present 360 degrees on both sides of the tire.

The inner liner was sound.

There were polished worn flanges on the wheel.

E. CONCLUSIONS

Based upon my education, training, experience, and examination of the subject right rear tire and wheel and the three (3) rear companion tires and wheels, the X-rays of the subject tire and a review of the materials provided to date, I have reached the following conclusions:

1) The subject tire is not defective or unreasonably dangerous in design or manufacture.

2) The subject tire was appropriately designed, manufactured, tested and stamped in compliance with applicable federal regulations and industry standards governing tires. The stated purpose of these regulations is to protect the public against unreasonable risk of accidents involving motor vehicles or motor vehicle equipment including tires. These safety regulations include both performance and tire identification or labeling standards.

3) The subject tire experienced a detachment of a portion of the tread and top steel belt. This condition alone does not mean the tire is defective. Tread and steel belt detachments occur for a variety of reasons with the vast majority of tread and steel belt detachments (full and partial) occurring as a result of damage from in-service abuse such as overdeflected operation, cuts, punctures, improperly repaired punctures, wear into the belt structure, fitment issues and/or road hazard impact injuries. The Tire Industry Association published a Passenger & Light Truck Tire Conditions Manual in 2005. This manual is for use by tire service personnel and discusses the above stated comment that tread and top steel belt detachments occur for a wide variety of service related reasons. Additionally, the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15 states that "because the major tire manufacturers have been in business for decades and have extensive research, design, development, manufacturing and quality control activities and procedures – and employ thousands of specially trained scientists, engineers and production personnel – design and manufacturing defects are extremely rare".

4) The subject tire was not in a defective condition or unreasonably dangerous at the time it left Goodyear's control. The tire underwent a substantial change in its condition after it left Goodyear. The tire in this case failed because the tire

suffered service conditions and abuses that changed its condition substantially after it left Goodyear. The changes to the tire are included in my inspection notes and photographs.

5) The subject tire experienced detachment of a portion of the tread and top steel belt as a result of a localized road hazard impact and overdeflected operation.

6) The physical evidence on the subject tire that is consistent with a localized road hazard impact injury includes:

    a) The partial detachment of the tread and top steel belt,
    b) the localized region of failure,
    c) the missing tread and top steel belt in the localized region,
    d) the multi-level rubber separation and polishing between the steel belts in the localized failure region,
    e) the lack of any manufacturing or design anomalies in the localized region of the tire as well as anywhere else in the tire.

The 2005 NHTSA publication "The Pneumatic Tire", states that road hazard impacts are one of the most common initiators of tire failures. The publication also states that if, when, and how the tire fails depends on the initial damage pattern and the type and severity of the subsequent operation. If the impact causes a tear between the belts, the damage can propagate and result in a tread/belt separation or detachment. The 2000 International Tire Exhibition and Conference Paper by Harold J. Herzlich titled "The Effect of Snaked Belt Anomalies on Tire Durability" states that the two most common initiators of belt related tire disablements are road hazard injuries to the belt package or other components and underinflation. Additional articles on this subject are the 2005 paper by Standards Testing Labs, "Impact Simulations-What happens when a tire/wheel impacts a road hazard" and the STL paper "Structural Impact Damage Under Varying Laboratory Conditions" presented at the 2006 International Tire Exhibition and Conference. The Tire Industry Association's 2005 Passenger & Light Truck Tire Conditions Manual as well as the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15 also discusses road hazard impact damage to tires.

Additionally, as recent as May 14, 2018 in Rubber & Plastics News, a paper titled "Influence of road hazard impact on radial car tires" was authored by Vandy Price of Michelin and Glenn Follen. This paper was also presented in Europe earlier in 2018 and also at the 2018 Clemson University Tire Symposium in South Carolina as well as at the September 1018 ITEC Conference. I have attached a separate list of "Impact Literature & Reference Materials".

7) The physical evidence on the tire and wheel that is consistent with overdeflected operation includes:

   a) the rim line polishing to grooving on both sides of the tire 360 degrees,
   b) the multi-level radial tear lines on the serial side and the opposite serial side belt edges, and
   c) the polished worn flanges on the wheel with some black rubber transfer.

   I gave a presentation at the September 2004 International Tire Exposition and Conference (ITEC) pertaining to rim line compression grooves. The title of the presentation was "Rim Line Compression Grooves as an Indication of Underinflated or Overloaded Tire Operation in Radial Tires". This conference is held every two years and is one of the premier seminars for presentations and peer review of scientific tire-related research. My paper and others at the ITEC were presented to a broad spectrum of tire industry people, including tire engineers and tire chemists. The paper illustrates rim line compression grooves as a result of controlled evaluations. The paper also studied how overdeflected operation in combination with speed can increase the operating temperature of a tire especially at the belt edges.

   Standards Testing Laboratories has also conducted and published three (3) research papers in 1997 and 1998 that support the technical position that rim line compression grooves develop primarily as a result of overdeflected operation. Additionally, the 2001 Northwestern Traffic Investigation Manual, Chapter 8, also discusses rim grooves as an indicator of overdeflected operation.

   Rim line compression grooves are an indication of the cumulative overdeflected operation history of a tire.

   Overdeflected operation can be caused by overloading, underinflation or a combination of both. Overdeflected operation increases the operating temperature of the tire. Overdeflected operation, depending on the length of time and overall service conditions such as speeds to which the tire is subjected, can damage the tire, including degrading the physical properties of the rubber compounds and reducing a tire's resistance to separation especially at the belt edges.

8) The basic design and function of tires, including that they are pneumatic devices, rely on compressed air to provide their designed load carrying capacity. The Tire

and Rim Association load and inflation tables that specify the maximum load carrying capacity for each size tire are based on the volume and pounds per square inch of compressed air inside each tire. As the inflation pressure is reduced inside a tire, the corresponding load carrying capacity is reduced. Additionally, as demonstrated in various technical papers, when a tire is operated underinflated, the operating temperature as well as the stresses and strains at the belt edges increases. Ref, "The Pneumatic Tire", edited by A. N. Gent and J. D. Walter, Published 2005 by NHTSA and “The Effect of Underinflation on Tire Operating Temperature”, Jenny Paige, ITEC 2012.

9) The remaining rubber over the bottom steel belt in the crown region, where the tread and top steel belt was detached, was worn with lateral abrasion indicating that the subject tire remained inflated for some initial part of the accident sequence. The curved cut through the outboard serial side sidewall at 2:00, would have had to occur later in the accident sequence or as a result of post-accident damage. There were also a few permanent bends in the bottom steel belt that would have occurred toward the end of the accident sequence and or as a result of post-accident moving of the vehicle.

10) I disagree with Mr. Southwell’s defect contentions and criticisms of the subject tire.

11) The exposed rubber over the bottom steel belt in the crown region was worn with lateral abrasion marks. The exposed rubber was also dirty. I disagree with Mr. Southwell’s opinion that the rubber on the crown region is hard and brittle (more than he would expect). Mr. Southwell’s photo 52 in his report that he uses to support shows dirty worn rubber in the crown with lateral abrasion marks. The rubber is not hard or brittle. The rubber shown in photo 52 as well as other areas on the detached surfaces is supple and show excellent multilevel tearing and excellent rubber to steel adhesion.

12) The multi-level tearing and rubber tear appearance of the exposed detached surfaces of the belt skim rubber are evidence that the overall rubber to rubber and rubber to steel adhesion levels as well as the fatigue resistance, age resistance and physical properties, such as rubber strength and tear strength of the belt skim compound, were appropriate in the subject tire. The multi-level tearing of the rubber between the steel belts is also evidence that there was good balanced adhesion between all the various interfaces of the laminate structure. There is no physical evidence of any inadequate bonding or adhesion deficiency or premature aging of the belt skims in the subject tire. There is also no evidence of insufficient antidegradants either by design or through manufacturing exceptions to counteract the degree of oxygen attack. These

types of manufacturing and/or design deficiencies would influence the tire 360 degrees around the tire. The steel cords overall are encased in rubber. The tire randomly tore apart in a multi-level way indicating good balanced adhesion and appropriate physical properties of the rubber. References: "Component Interfacial Tearing Appearances" by Gary Bolden and TIA 2005 - "Passenger & Light Truck Tires Conditions Manual".

13) The tire scientific community of tire engineers and chemists worldwide has known for decades that tread/belt separations and detachments can and do occur from impact damage and that the final failure of the tire from a tread/belt separation can occur days, weeks, and even months after the impact damage has occurred. This is part of the body of knowledge of tire engineers and chemists. The Tire Industry Association's 2005 Passenger & Light Truck Tire Conditions Manual as well as the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15 also discusses road hazard impact damage to tires leading to tread/belt separations and detachments. I have attached a separate list of "Impact Literature & Reference Materials".

14) The tire scientific community of tire engineers and chemists worldwide has known for decades that tread/belt separations and detachments can and do occur from overdeflected operation. This is part of the body of knowledge of tire engineers and chemists. The Tire Industry Association's 2005 Passenger & Light Truck Tire Conditions Manual as well as the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15 also discusses overdeflected operation in tires leading to tread/belt separations and detachments. I have attached a separate list of "Overdeflected Operation Index" of materials".

15) The 2013 Rubber Manufacturers Association "RMA" publication "Tire Care & Safety" states that "Continuous use of a tire in an under inflated condition will result in heat build-up and internal damage. This may result in a tire failure, including tread/belt separations". This same publication states that "Impact damage to the tire may initially show little or no external evidence. However, internal damage can progress with additional mileage and eventually cause internal tire separation, detachment or sudden loss of inflation".

16) There is no physical evidence of thermos-oxidative degradation in the subject tire. The localized region of multi-level rubber tearing is not related to oxidative degradation or rubber reversion related oxidative degradation. The rubber-to-rubber adhesion was excellent and the rubber between the steel belts was still supple and not brittle or cracked. The subject tire experienced a localized failure as a result of a localized road hazard impact injury and overdeflected operation.

17) Mr. Southwell states that there was an unexpected smooth and polished area on the opposite serial side at 150 degree. He uses photograph 53 to show this area in his report. He is incorrect that this location is at 150 degrees. This location is actually at approximately 310 degrees on the opposite serial side. This is the polishing that occurred in the localized region of failure as a result of the localized separation growing in the tire from the road hazard impact. This is a very normal and expected condition in a tire with a separation that is continued to be used in service. This polished area is not indicative of an adhesion anomaly as indicated my Mr. Southwell. The area of polishing is over multi-level rubber fracture tear lines and not at a manufactured interface as indicated by Mr. Southwell.

18) It is speculation by Mr. Southwell that the so called "wild wire" that shows up in the X-Rays at approximately 50 degrees in the serial side shoulder region is actually a "wild wire". The term wild wire typically is related to a manufacturing condition. It is also speculation to call it a single frayed second belt filament. It is not possible to conclude that the object noted in the X-Ray was actually from the tire (bottom or top belt). The tire experienced a tread and top steel belt detachment and went through an accident sequence that included the tire at some point even rotating deflated. It is no unusual for tires to experience broken steel cords and filaments to become lodged in various areas of the tire including through the inner liner. Tires also get punctured and pickup various external objects during a tire disablement and accident sequence. What can be concluded with a high degree of engineering certainty is that the object had nothing to do with the localized failure of the tire, and was actually in an area where the tire was intact and did not fail.

19) It is speculation by Mr. Southwell to state the tread was most probably devoid of any visual indicators that would, to the average person, suggest was in any way unsuitable for normal use. The portion of the tread that was detached was not recovered. A portion of this missing detached tread was over the localized separation regions of the tire. It is not possible to opine that this missing tread would not have had any physical evidence on it from a road hazard impact as well as any evidence of localized accelerated tread wear.

20) Mr Southwell's comments and literature referenced in his report regarding the opinion that tires must wear out before they fall apart assumes something very important that he does not mention in his report. Tires will wear out before they fall apart only if they are properly maintained, used and stored. Tires require maintenance. Many tires need to come out of service or are taken out of service before they wear out as a result of many different service related conditions. As an example tread and steel belt detachments such as encountered with the

subject tire occur for a variety of reasons with the vast majority of tread and steel belt detachments (full and partial) occurring as a result of damage from in-service abuse such as overdeflected operation, cuts, punctures, improperly repaired punctures, wear into the belt structure, fitment issues and/or road hazard impact injuries. The Tire Industry Association published a Passenger & Light Truck Tire Conditions Manual in 2005. This manual is for use by tire service personnel and discusses the above stated comment that tread and top steel belt detachments occur for a wide variety of service related reasons. The subject tire failed as a result of a localized road hazard impact and overdeflected operation.

21) There is nothing unusual about the steel belts in the subject tire that would be of concern related to tire durability. I reviewed the x-rays of the subject tire, and there is nothing unusual about the steel belts in the subject tire that would be of concern related to tire durability. Based on my examination of the subject tire and X-rays, the steel belts are in line with well-manufactured tires and did not cause any tire durability issue in the subject tire.

I have also analyzed belt cord conditions on a large number of tires in my career, including tires manufactured by a variety of tire manufacturers both in new tires and worn tires. Additionally, on September 18, 2012, at the 2012 International Tire Exposition and Conference "ITEC", in Cleveland, Ohio, I presented a paper pertaining to an X-ray study of sixty (60) worn out passenger and light truck tires that I conducted. Recent shearography was performed on the 60 worn out tires. The shearography results further supports the opinions in the paper. This study confirms that the belt conditions in the subject tire and the companion tires are normal and are not a concern related to durability. In my experience, the steel belts in the subject tire, based upon my examination, are in line with hundreds of millions of well-manufactured radial tires produced in the United States and worldwide over the years and did not cause or contribute to the failure of the tire.

Additional technical papers that support this include: "Belt Misalignments and Belt/Belt Tear Patterns" ITEC 2002 and "The Effect of Snaked Belt Anomalies on Tire Durability" ITEC 2000 both by Harold J. Herzlich of Herzlich Consulting, Inc.

22) I have conducted thermography demonstrations of passenger and light truck tires that have been X-Rayed. These demonstrations were conducted to show the significant heat generated in the steel belt area when a tire is run overdeflected. These same demonstrations showed no increase in the heat generated at the regions of the belt conditions similar to the alleged belt conditions in the subject tire and normally found in tires. The results of this

testing were presented at the September 2016 International Tire Exhibition and Conference (ITEC) in Akron, Ohio in a paper titled "Typical Manufacturing Conditions in Steel Belted Radial Tires: Do They Influence Tire Durability?". The paper was also recently published in the "2017 Tire Technology International Annual".

23) All tires, as well as most other manufactured products, are designed and manufactured with tolerances. The tolerances for the various parameters of the steel belt manufacturing have historically been established recognizing the manufacturing capabilities, and the importance of making sure there are tight controls in place to insure all tires manufactured will perform the same for consumers for performance considerations such as ride, handling and durability. Tolerances are not a cliff where as soon as a tire has a belt condition slightly outside the tolerances that a performance or durability issue will arise. Tolerances are set up to ensure the manufacturing of tires is held to high standards and to insure a typical or normal belt condition does not cause a performance or durability issue in a tire. The belt conditions in the subject tire are normal expected belt conditions found in any well manufactured tire and did not cause or contribute to the subject tire failure.

24) The taking of X-Rays of the steel belts in a tire must be done with caution and consideration of the normal distortion and parallax that occurs in the X-ray process. Interpretation and measurements taken off X-Rays must also be recognized as being subject to ray distortion and parallax. Chapter 16 of the NHTSA "The Pneumatic Tire" publication discusses this issue as does my 2012 International Tire Exposition and Conference "ITEC" paper pertaining to an X-ray study of sixty (60) worn out passenger and light truck tires that I conducted.

25) The inner liner thickness is not defective in the subject tire and in my experience is in line with well-manufactured radial tires sold and used in the United States over the years. The subject tire does not have any exposed or penetrating body ply cord. The inner liner did not cause or contribute to the localized failure of the tire.

26) Increasing rubber gauges of components such as increasing the inner liner gauge does not necessarily improve tire durability. Unnecessary increases in rubber gauges can actually reduce component and overall tire life. Unnecessary increases in rubber gauges of rubber components increase tire weight, increase tire operating temperature and can increase the stresses and strains in the tire. The design approach to tires is to optimize each component in the tire to obtain the required tire performance.

27) A nylon cap ply would not have prevented this tread and steel belt detachment on the tire from occurring. Nylon cap plies placed circumferentially (0 degrees) over the steel belts in radial tires do not offer sufficient stiffness and support to the steel belt edges to have an influence on the various stresses and strains that the belt edges must endure during the tire's operational life.

Nylon cap plies or strips placed circumferentially (0 degrees) over the steel belts do not prevent belt edge separation and tread/belt detachment when a tire has been run overdeflected, damaged, improperly repaired or injured. I have personally examined many tires with nylon cap plies or nylon strips that have experienced tread and top steel belt detachments.

Nylon cap plies or strips are used to increase high speed performance and are mainly used in high speed rated tires. I have reviewed many competitor radial tires over my career, all of which confirm this knowledge.

Nylon cap plies or strips mainly offer an advantage in restricting a high speed rated high performance tire's outside circumference from growing due to centrifugal forces at high speeds and also delaying the formation of standing wave patterns. This is because the nylon is placed in the tire in a circumferential direction and has low elongation properties.

I gave a presentation in October 1986 to The Tire Technology Conference at Clemson University in Greenville, South Carolina. The title of the presentation was "What makes a High Performance Tire Different than a Regular Tire?" This conference is held annually and is attended by a broad spectrum of tire industry people, including tire engineers and tire chemists. This particular paper presentation was very well received and reflects the understanding of the tire industry in regard to the use of nylon cap plies and cap strips. This same presentation was also presented at the Akron Rubber Group in Akron, Ohio and at the American Retreaders Association's annual convention in Louisville, Kentucky.

I also continue to examine tires that do have full width nylon cap plies that have experienced tread and top steel belt detachments. The full width nylon cap has not prevented or minimized the tread and top steel belt detachment from occurring.

In sum, nylon cap plies or strips are used as a method to increase high speed performance and reduce the formation of standing wave patterns and not as a method to stop or prevent belt edge separations and tread/belt(s) detachments from occurring.

28) I disagree that there were safer alternative designs such as nylon or aramid or polyamide as overlays that would have made the tire more durable and/or more resistant to foreseeable road hazards. The subject tire already has two (2) steel belts. This type of construction has proven over a number of decades to be extremely durable. These alternative designs would not have prevented or significantly reduced the risk of the subject tire's disablement.

29) The subject tire was manufactured in 1994, twenty-one (21) years before the accident. The subject tire's design and construction was state of the art for light truck tires manufactured in 1994. The vast majority of radial light truck tires designed and manufactured in the United States at the time of the manufacture of the subject tire incorporated two (2) steel belts and did not incorporate a nylon cap ply.

30) There is no condition in the subject tire that suggests that Goodyear's quality assurance processes were inadequate. The alleged defective conditions are not defects and did not cause or contribute to the subject tire disablement. The tire experienced a tread/belt detachment as a result of service conditions.

31) The subject tire (and companion tires) should not have been in service on the day of the accident. The person responsible for maintaining and inspecting the subject tire should have taken remedial action and removed the subject tire (and companion tires) from service before the accident. Additionally, the tread over the localized region where the subject tire failed would have appeared distorted leading up to the crash. An increase in noise and vibration from the tire leading up to the tire failure would also have been signals to most drivers that the tire needed to be replaced. There is an SAE Paper 2007-01-0733, titled "Vehicle Response Comparison to Tire Tread Separations Induced by Circumferentially Cut and Distressed Tires" by a number of gentlemen from Tandy Engineering & Associates, Inc. and Ford Motor Company. As part of "distressing" the tires in order to achieve a tread/belt separation on a vehicle in a relatively short period of time, they dropped the inflation pressure to 15 psi and drove on the tire at approximately 70 miles per hour on the right rear position of a 1999 Ford Explorer. After approximately four hours, the tire failed as a result of a tread/belt separation and detachment. The paper states that the forces from the vibrations from the distressed tire increased in amplitude over many miles, up to the point of the tread/belt separation. The paper also states that the vibration can be signals to the driver that something is occurring. These signals were measured and documented for approximately 300 miles of driving in this paper.

32) Only a small percentage of tires remain in service for 10 years or more. *See, e.g., the RMA Scrap Tire Project, dated December 19, 2005*. Thus, it should be recognized that this case, involving twenty-one (21) year old tires which were still in service, represents a highly unusual situation.

33) The subject tire and companion tires were approximately twenty-one (21) years old at the time of the accident. It is well known and understood in the tire community including tire professionals, that old tires must be inspected on a regular basis. The longer a tire is in service, the more opportunity that a tire may experience some type of service condition that with continued use may cause a tire failure. There is no specific chronological age at which a tire should come out of service. The highly unusual age of the tire(s) and the unknown service life of the tires would have been another reason to remove the tire(s) from service.

34) The shearography of the companion tires must be evaluated recognizing that the companion tires were also twenty-one (21) years old and were also involved in the accident that can by itself damage tires. There was physical evidence on the companion tires that they also had been run in an overdeflected manner for some portion of their service life. Mr. Southwell speculates that, given sufficient additional service, would almost certainly result in a tread and belt detachment of the type that occurred in the subject tire. Shearography is an appropriate non-destructive tool when there is a base line or control to compare the results. Is this situation, the overall service history or storage conditions are not known. Additionally, internal damage to the companion tires that may have occurred from the accident is unknown. Ref. Chapter 16 from "The Pneumatic Tire" titled *Non-Destructive Tests and Inspections*.

35) Many, but not all, tire companies have had service life recommendations long before the accident took place, including Bridgestone/Firestone (2005), Michelin (2006), BFGoodrich (2006), Continental Tire (2006), Vredestein (2007), Hankook (2009), Kumho (2011), and Yokohama (2011). These service life recommendations do not indicate that there is a specific age limit of a tire but a general recommendation to remove tires typically at ten (10 years because of the unknown service life of a tire that old. The subject and companion tires were twenty-one years old. A competent tire service or vehicle inspections professional should have been aware of these numerous recommendations and taken the tire(s) out of service.

36) Goodyear's position of not having a specific service life recommendation but rather have a tire professional or experienced tire person responsible for the tire maintenance to fully inspect the tires and make a determination as to the

condition of the tire for continued use is technically the correct approach. Some tires need to come out of service well before ten (10 years and some, if properly maintained can safely be used well past ten (years).

37) I am not aware of any tire manufacturer in the world that places either a "born on" or an "expiration date" on a tire. I participated in a survey of 1,240 tires made to dozens of brands that had been removed from service for various reasons. All of the tires contained a DOT code that indicated the week and year of manufacture as required by federal regulations. None of the tires contained a "born on" or an "expiration date."

38) One reason that tires do not and should not have an expiration date is because there is no technical data that supports a specific tire age for removal from service. Different tires may experience vastly different service lives (i.e., loads, inflation pressures, service conditions, etc.) and it is those different service conditions which principally dictate the ultimate service life of a tire.

39) Another reason that tires do not have expiration dates is because they could provide consumers with a false sense of comfort and actually lead to an even more dangerous situation. Studies show that the vast majority of tires will need to come out of service for any number of different conditions (i.e., punctures, improper repairs, worn out, etc.). If there were "expiration dates" on tires, it could lead consumers to falsely believe that their tires are safe to use up until the expiration date, when in fact those tires need to come out of service much sooner for other reasons.

40) Another reason that tires do not and should not have "born on" or "expiration dates" is because there is not enough room on a tire's sidewall for all of the potential hazards associated with tires. I am familiar with dozens if not over a hundred potential hazards involving tires. Those include but are not limited to hydroplaning hazards, improper mounting hazards, not repairing tires properly, failure to match tires with proper wheel size, operating damaged tires, using tires on vehicles that are not properly aligned, and placing tires on damaged wheels. These are just some examples that could involve any tire. In my opinion, it is neither feasible nor advisable to address all of these potential hazards in the limited space on the sidewall of a tire.

41) NHTSA has issued many rules and regulations with respect to tires, but does not require a "born on date", "age warning" or an "expiration date." In fact, in 2015, NHTSA declined the opportunity to make a change to the current DOT date-code system. NHTSA stated, "we do not believe a change to the date code is necessary

for consumers to determine when their tires were manufactured. NHTSA's tire consumer Web site, *http://www.safercar.gov/tires/index.html* explains in several places how to find and interpret the date code. Furthermore, a person should easily be able to determine the location of the date of manufacture on a tire is located either by querying an internet search engine or by asking a tire dealer."

42) The current DOT date coding system requires all tires sold in the United States to identify the week and year of manufacture. This uniform system has been in place for over 40 years. In my opinion, a competent tire service professional should know how to read a DOT number.

43) In my experience, the forces generated on a vehicle from a tire failure do not normally adversely affect the dynamics of the vehicle or cause loss of control. If a loss of control does occur, it is typically related to other factors. I have instrumented many vehicles during my career and measured the forces going into a vehicle during various types of tire disablements at highway speeds, including tread and top steel belt detachments such as encountered in this crash. According to the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15, the statistics indicate that only a fraction of the time, 0.06% to 0.50%, does an in-service tire failure end up with some type of crash.

This report is based upon a reasonable degree of engineering certainty, my education and work experience and on the materials presently available to me. I reserve the right to supplement or amend this report in light of newly acquired information. I also expect to use demonstratives as part of my testimony.

I have enclosed a copy of my current CV which includes publications, my deposition and trial testimony list, a list of case specific file materials, a list of general reference file materials, a list of "Impact Literature & Reference Materials" and a list of "Overdeflected Operation Index" of materials. I am also enclosing a copy of my inspection notes. My hourly billing rate is currently $375 per hour as of September 1, 2018.

If you have any questions regarding my examination, please contact me.

Joseph L Grant

Joseph L. Grant

Impact Literature & Reference Materials Index

	Title	Author	Source	Date
1	Michelin 2007 Owner's Manual	n/a	Michelin North American Inc.	2007
2	NHTSA's Tire Safety- Everything Rides On It	n/a	National Highway Traffic Safety Administration	n/a
3	The Pneumatic Tire, Chapter 15, Introduction to Tire Safety, Durability and Failure Analysis	J.D. Gardner and B.J. Queiser	Published by NHTSA, Edited by A.N. Gent and J.N. Walter, The University of Akron	2005
4	Care and Service of Automobile and Light Truck Tires- RMA	n/a	Rubber Manufacturers Association	1995
5	Tire Forensic Investigation- Analyzing Tire Failure	Thomas R. Giapponi	SAE International Publication	2008
6	Tire Examination Following Accidents	James D. Gardner and J. Stannard Baker	Northwestern University Traffic Institute Publication	1985
7	Tire Examination after Motor Vehicle Collisions (Chapter 8)	Calvin P. McClain, Jr. and Michael A. DiTallo	Northwestern University Center for Public Safety	n/a
8	Tire Examination after Motor Vehicle Collisions (Chapter 13)	Calvin P. McClain, Jr. and Michael A. DiTallo	Northwestern University Center for Public Safety	n/a
9	Impact Simulations in the Lab	G.C. Bolden, J.M. Smith and T.R. Flood (STL)	Tire Technology International for Standard Testing Laboratories USA	2001
10	Structural Impact Damage Under Varying Laboratory Conditions- Paper 17B for ITEC 2006	Gary Bolden, John Smith and Timothy Flood (STL)	Presented at the International Tire Exhibition and Conference (a Rubber and Plastics News Event)	2006
11	Structural Impact Damage Under Varying Laboratory Condition- pgs. 89-92	Gary Bolden, John Smith and Timothy Flood (STL)	Tire Technology International: The Annual Review of Tire Materials and Tire Manufacturing Technology	2006
12	Impact Demonstration Study Conducted by STL- Canales	Standards Testing Laboratories	Standards Testing Laboratories	2000

13	Impact Demonstration Study Conducted by STL-Piard	Standards Testing Laboratories	Standards Testing Laboratories	2006
14	Impact Demonstration Study Conducted by STL-Prince	Standards Testing Laboratories	Standards Testing Laboratories	2002
15	Various Impact Studies Conducted by STL (Impact Demonstration Video 28 below)	Standards Testing Laboratories	Standards Testing Laboratories	n/a
16	Impact Simulations: What Happens When a Tire/Wheel Impacts a Road Hazard	Gary Bolden, John Smith and Timothy Flood (STL)	Tire Technology International: The Annual Review of Tire Materials and Tire Manufacturing Technology	2005
17	Road Hazard Impact PowerPoint: Bulge on Tread and Split on Innerliner	Joseph L Grant (photographs)	n/a	n/a
18	STL Road Hazard Impact Machine	Standards Testing Laboratories	STL Machinery Division	1998
19	Video – Impact Studies – Prince Tire on Impact Machine	Standards Testing Laboratories	Standards Testing Laboratories	2002
20	Video – Impact Studies – Prince Tire on Test Wheel	Standards Testing Laboratories	Standards Testing Laboratories	2002
21	Video – Impact Studies – STL Videos	Standard Testing Laboratories	Standards Testing Laboratories	n/a
22	Video – Impact Studies – Video Excerpts	Standards Testing Laboratories	Standards Testing Laboratories	n/a
23	Photos of Prince & Piard Tires	Joseph L Grant (photographs)	n/a	n/a
24	The Effect of Snaked Belt Anomalies on Tire Durability	Harold Herzlich	International Tire Exhibition and Conference	2000
25	Passenger and Light Truck Tire Conditions Manual	n/a	Tire Industry Association	2005
26	RMA Tire Care and Safety Guide	n/a	Rubber Manufacturers Association	June 2001
27	RMA Care and Service of Passenger and Light Truck (LT) Tires	n/a	Rubber Manufacturers Association	August 2011
28	Commercial Medium Tire Debris Study	n/a	US Department of Transportation NHTSA	Dec. 2008

29	Forensic Analysis in Tire Tread Separations	John W. Daws	Rubber and Plastic News	03/05/07
30	Dynamic Fracture of Natural Rubber	Ali A. Quraishi and Michelle S. Hoo Fatt	Tire Science and Technology Vol. 35, No. 4	Oct.-Dec. 2007
31	High Speed Tensile Testing of Tire Textiles	K.B. O'neil, M.F. Dague and J.E. Kimmel	Applied Polymer Symposia No. 5	1967
32	Avon Tyre: Tire Care for Safe Driving- "Heading off Trouble"	n/a	www.avontyresracing.com	2007
33	Impact Damage- Tire Failure	n/a	www.sullivantire.com	n/a
34	Impact Damage- Tire Failure (Goodyear)	n/a	www.goodyeartires.com	n/a
35	Tire Suspension- Chassis Dynamics in Rolling Over Obstacles for Ride and Harshness Analysis (Impact Simulation and Analysis)	Vladimir Kerchman	Kumho Tire Co., Inc	n/a
36	Care and Service of Commercial Truck and Bus Tires	n/a	U.S. Tire Manufacturers Association	2017
37	Tire Care & Safety	n/a	Rubber Manufacturers Association	2013
38	Road Hazard Impacts: Their Influence on Radial Passenger Tires and the Forensic Signs they Leave Behind	Vandy Price & Glenn Follen	Clemson University Global Tire Industry Conference & Europe Tire Technology Exposition, RPN & 2018 ITEC	2018

JOSEPH L. GRANT GENERAL REFERENCE LIST of MATERIALS

OVER MY CAREER, AS PART OF MY TRAINING AND EXPERIENCE, I HAVE REVIEWED AN EXTENSIVE NUMBER OF PUBLICATIONS, TEST RESULTS, ARTICLES AND VARIOUS OTHER LITERATURES RELATED TO TIRE PERFORMANCE ISSUES. THE LIST BELOW IDENTIFIES A SAMPLE OF THE MATERIALS THAT I HAVE BEEN EXPOSED TO AND REVIEWED. THE ACTUAL EXTENSIVE LIBRARY OF MATERIALS THAT I HAVE BEEN EXPOSED TO AND REVIEWED IS FAR GREATER THAN THIS LIST

1. The Tire and Rim Association Yearbooks & Materials
2. Bennett Garfield, Who Makes it? And Where? Directory (Annual)
3. Bennett Garfield, OE Tire Size Guide (Annual)
4. Bennett Garfield, Tire Guide (Annual)
5. Bennett Garfield, Tread Design Guide (Annual)
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41. NHTSA, DOT §571.120 – Standard No. 120; Tire selection and rims other than passenger car tires
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43. NHTSA, DOT §569 – Part 569 – Regrooved Tires
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91. Effects of Over-Deflection on the Tire/Rim Interface, Standards Testing Laboratories, Inc., Schnuth, Smith, Bolden, Flood, September1998
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2	Compression Grooving and Rim Abrasion as Indicators of Over-Deflected Operating Conditions in Tires	Schnuth, Fuller, Follen, Gold, Smith	Standards Testing Laboratories	Oct. 1997
3	Effect of Over-Deflected Operation on the Tire/Rim Interface	Schnuth, Smith, Bolden, Flood	Standards Testing Laboratories	Sep. 1998
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5	Bead Compression Grooving: Characteristics and Influences of Tire Deflection	Jean Claude Brico	ITEC	2004
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7	Tyre Damage and It's Causes	n/a	Continental Tire	2005/2006
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9	Traffic Collision Investigation (Chapter 8)	Calvin P. McClain and Michael A. DiTallo	Northwestern University Center for Public Safety	n/a
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19	Overdeflection Video	n/a	n/a	n/a
20	Human Performance & Vehicle Group Chairmen's Report of Operational Testing	n/a	National Transportation Safety Board, Office of Highway Safety	n/a
21	Typical Manufacturing Conditions in Steel Belted Radial Tires: Do They Influence Tire Durability	Vandy Price Joseph Grant	ITEC	2016

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24	Motorcoach Tire Fire Test Report	Office of Research and Engineering	National Transportation Safety Board	2006
25	Human Performance & Vehicle Group Chairmen's Report of Operational Testing	Office of Highway Safety	National Transportation Safety Board	2007
26	Tire Care & Safety	n/a	Rubber Manufacturers Association	2013

RR SUBJECT

TIRE EXAMINATION NOTES

LOCATION MATTHEWS, NC TIRE SIZE LT235/85R16 M+S

CASE SUSMAN (LOVELAND) TIRE NAME GOODYEAR WRANGLER HT

DATE 11/15/18 LOAD RANGE E

EXAMINER JOE GRANT DOT M DORNJHV 244

UTQG — YEAR MANUFACTURED: 1994

TUBELESS RADIAL

GENERAL DESCRIPTION:

MOUNTED ON RIM? RIM SEPARATE INFLATION PRESSURE NA

TIRE REMNANTS TIRE WITH PORTION OF TREAD + TOP STEEL BELT DETACHED + MISSING

TIRE POSITION ON RIM RIM SEPARATE, "V" MARKED ON SS AT 8:00

AVERAGE TREAD DEPTH 8.5/32

SAFETY WARNING STAMPED ON BOTH SIDES OF TIRE

TIRE INFORMATION:

CONSTRUCTION (1+2, etc) 2+2 COLOR SIDEWALL BLACK

PLY MATERIAL POLYESTER (2) BELT MATERIAL STEEL (2)

MOLD #'S 426R, 272098-GRF-65MM

SINGLE LOAD/INFL. 3042 lbs @ 80 psi DUAL LOAD/INFL 2778 lbs @ 80 psi

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1) WORN POLISHED FLANGES

RIM INFORMATION:

RIM MANUFACTURER —

RIM SIZE (Stamped or Measured?) 16 x 6.5 J

RIM DOT#/ID# 06 2502 NUMBER OF RIM PIECES ONE

VALVE INFORMATION:

VALVE MANUFACTURER TOPSEAL VALVE TYPE TR 600 HP

VALVE CORE PRESENT YES VALVE CAP PRESENT YES

RR SUBJECT

TIRE EXAMINATION NOTES

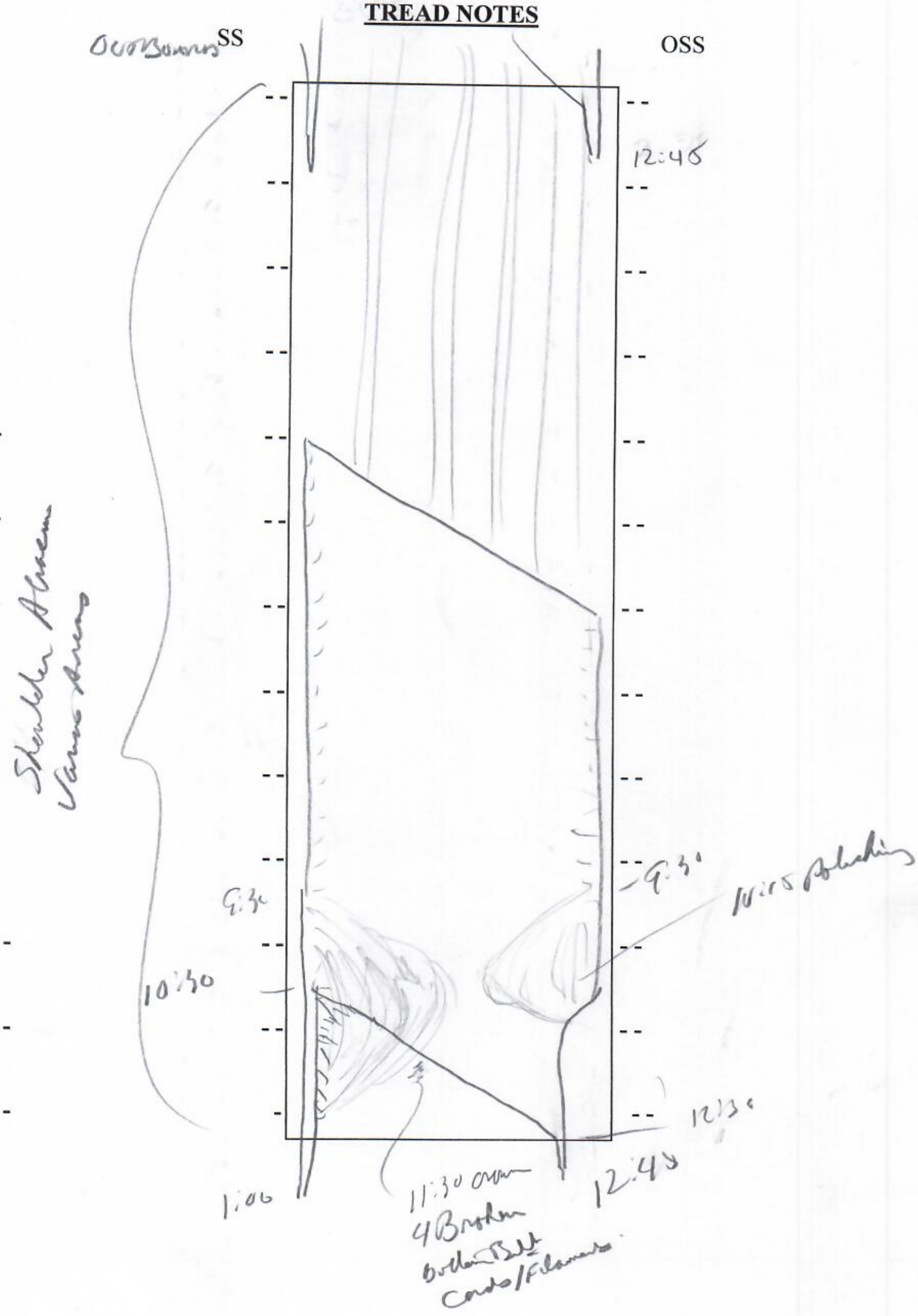
CASE: SUSMAN (LOVELAND)

DOT: MDORN JHV 244

SIZE: LT235/85R16 M+S

TREAD NOTES

12:00 (0 degrees) -
1:00 (30 degrees) -
2:00 (60 degrees) -
3:00 (90 degrees) -
4:00 (120 degrees) -
5:00 (150 degrees) -
6:00 (180 degrees) -
7:00 (210 degrees) -
8:00 (240 degrees) -
9:00 (270 degrees) -
10:00 (300 degrees) -
11:00 (330 degrees) -
12:00 (360 degrees) -



RR SUBJECT

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MDORNJHV244

SIZE: LT235/85R16 M+S

OUTBOARD

TREAD GROOVE DEPTHS

SS	1	2	3	4		
12:00	8	9	9	10		
1:00	8	8½	8½	9		
2:00	8	8	8	9½		
3:00	8	8	8	9		
4:00	8	8	8	9		
5:00	—	—	—	9		
6:00	—	—	—	—		
7:00	—	—	—	—		
8:00	—	—	—	—		
9:00	—	—	—	—		
10:00	—	—	—	—		
11:00	—	—	—	—		
AVE.	8	8½-	8½-	9+		

1) Tread Hardness - 84 Shore A Durometer
2) A few stones embedded in Sipes

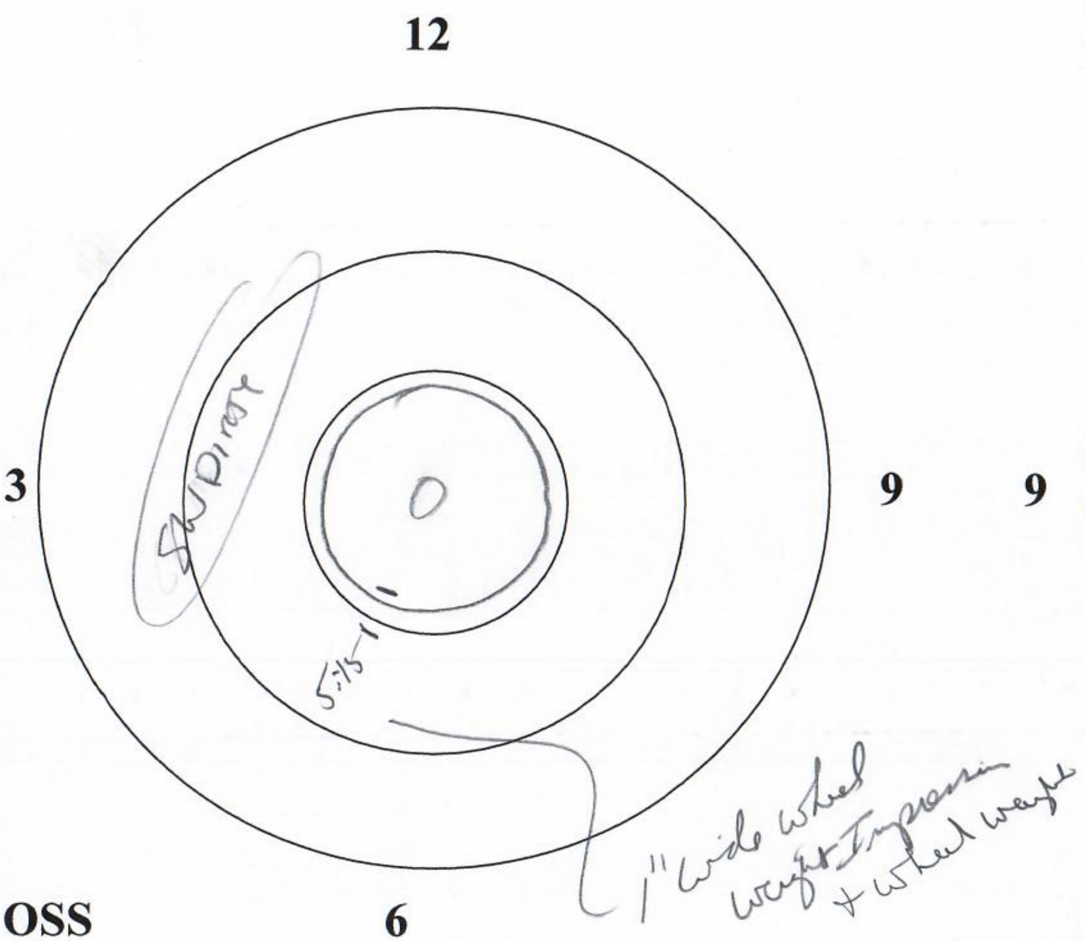
RR SUBJECT

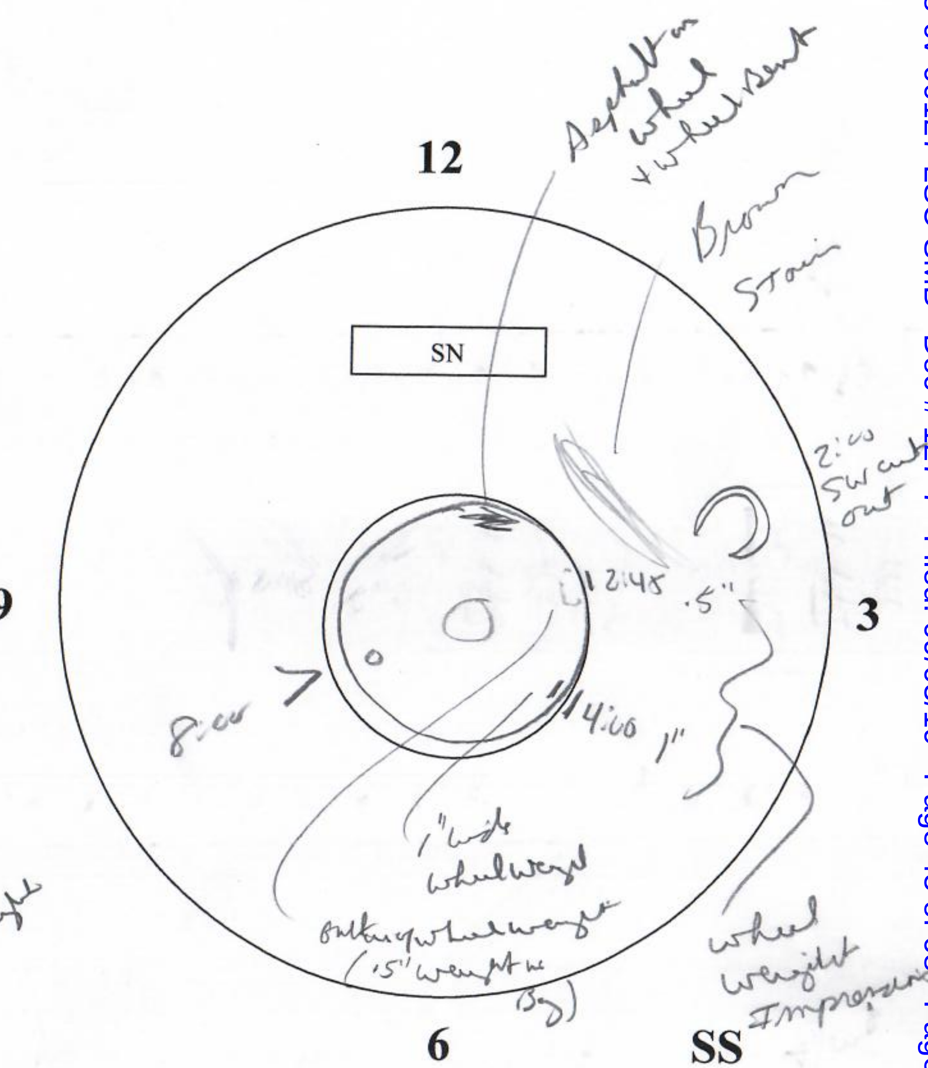
CASE: SUSMAN (LOVELAND) **TIRE EXAMINATION NOTES**

Page 4 of 6

DOT: MDORNJHV244

SIZE: LT235/85R16 MAS





NOTES:

1) Rim Line Polishing & Grooving 360° on Both Sides of Tire,

2) Innerliner Sound.

SUSMAN (COVERAND)

MDORN JH V2W RR SUBJECT

LT235/85R16 MJS

5

of 6

1) Tread + Top Steel Belt Detached + Missing from ~4:00 SS / 6:00 OSS to ~10:30 SS / 12:30 OSS.

2) Tread + Top Steel Belt Partially Detached from ~10:30 SS / 12:30 OSS to ~1:00 SS / 12:45 OSS where still attached. SS Top Belt cord ends from ~10:30 SS to ~12:00 SS are loose, bare, rusted, bent + Roughed.

3) Overall, Steel Belt cords adhered in Rubber, Exposed Steel Cords Rusted.

4) Rubber remaining over bottom Steel belt in detachment Region in Crown is worn with lateral abrasion.

5) 1F SO Crown 4 Broken Bottom Steel Belt Cords/filaments

6) Multi level Rubber tearing on all detached Surfaces. Radial Multi level Tear lines along SS + OSS Bottom Belt edge in detachment region.

7) A few permanent bends in bottom steel belt in detachment Region.

KR SUBJECT

MDORNJAV2Y4
LT235/85R16 MIS

6 of 6

8) Localized Region of Multi level Rubber (Separation) Tearing on SS in Rubber over bottom belt from ~9:30 SS to ~12:00 SST Extending to crown at ~10:30.

9) Localized Region of Multi level Rubber (Separation) Tearing on OSS in Rubber over Bottom Belt from 9:30 OSS & 11:00 OSS & Extending to Crown at ~10:15. Polishing visible in the ~10:15 OSS Region.

10) No Manufacturing Anomalies.

LF COMPANION

TIRE EXAMINATION NOTES

LOCATION MATTHEWS, NC

TIRE SIZE LT235/85R16 MHS

CASE SUSMAN (LOVELAND)

TIRE NAME GOODYEAR WRANGLER HT

DATE 11/15/18

LOAD RANGE E

EXAMINER JOE GRANT

DOT MDORNJHV 234

UTQG —

YEAR MANUFACTURED: 1994

TUBELESS RADIAL

GENERAL DESCRIPTION:

MOUNTED ON RIM? RIM SEPARATE INFLATION PRESSURE NA

TIRE REMNANTS ONE TIRE

TIRE POSITION ON RIM RIM SEPARATE, "1" MARKED ON USS AT 12:30

AVERAGE TREAD DEPTH 9/32

SAFETY WARNING STAMPED ON BOTH SIDEWALLS

TIRE INFORMATION:

CONSTRUCTION (1+2, etc) 2+2

COLOR SIDEWALL BLACK

PLY MATERIAL POLYESTER (2)

BELT MATERIAL STEEL (2)

MOLD #'S 422L, 270278 6RF-65MM

SINGLE LOAD/INFL. 3042 lbs @ 80psi

DUAL LOAD/INFL 2778 lbs @ 80psi

RIM INFORMATION:

1) POLISHED WORN FLANGES

RIM MANUFACTURER —

RIM SIZE (Stamped or Measured?) 16x6.5J

RIM DOT#/ID# 06 2502

NUMBER OF RIM PIECES ONE

VALVE INFORMATION:

VALVE MANUFACTURER DILL

VALVE TYPE TR 600-HP

VALVE CORE PRESENT NO

VALVE CAP PRESENT NO

LF COMPANION

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MOORNJHVZ34

SIZE: LT235/85R16 MTS

TREAD NOTES

SS

OSS

OUTBOARD

12:00 (0 degrees) -

1:00 (30 degrees) -

2:00 (60 degrees) -

3:00 (90 degrees) -

4:00 (120 degrees) -

5:00 (150 degrees) -

6:00 (180 degrees) -

7:00 (210 degrees) -

8:00 (240 degrees) -

9:00 (270 degrees) -

10:00 (300 degrees) -

11:00 (330 degrees) -

11:00 Visible Cosmetic opening of leading edge of Tread splice

12:00 (360 degrees) -

LF COMPANION

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MDORNJHV Z34

SIZE: LT235/85R16 MJS

TREAD GROOVE DEPTHS

SS	1	2	3	4		
12:00	8	9	9	10		
1:00						
2:00						
3:00	9	9	10	10		
4:00						
5:00						
6:00	8	8½	9	10		
7:00						
8:00						
9:00	8	9	9	10		
10:00						
11:00						
AVE.	8+	9-	9+	10		

OUTBOARD

1) Tread Hardness ~83 Shore A Durometer

2) A few Stones Embedded in Spots

3) Some SS + OSS Tread Shoulder Rounding 360°

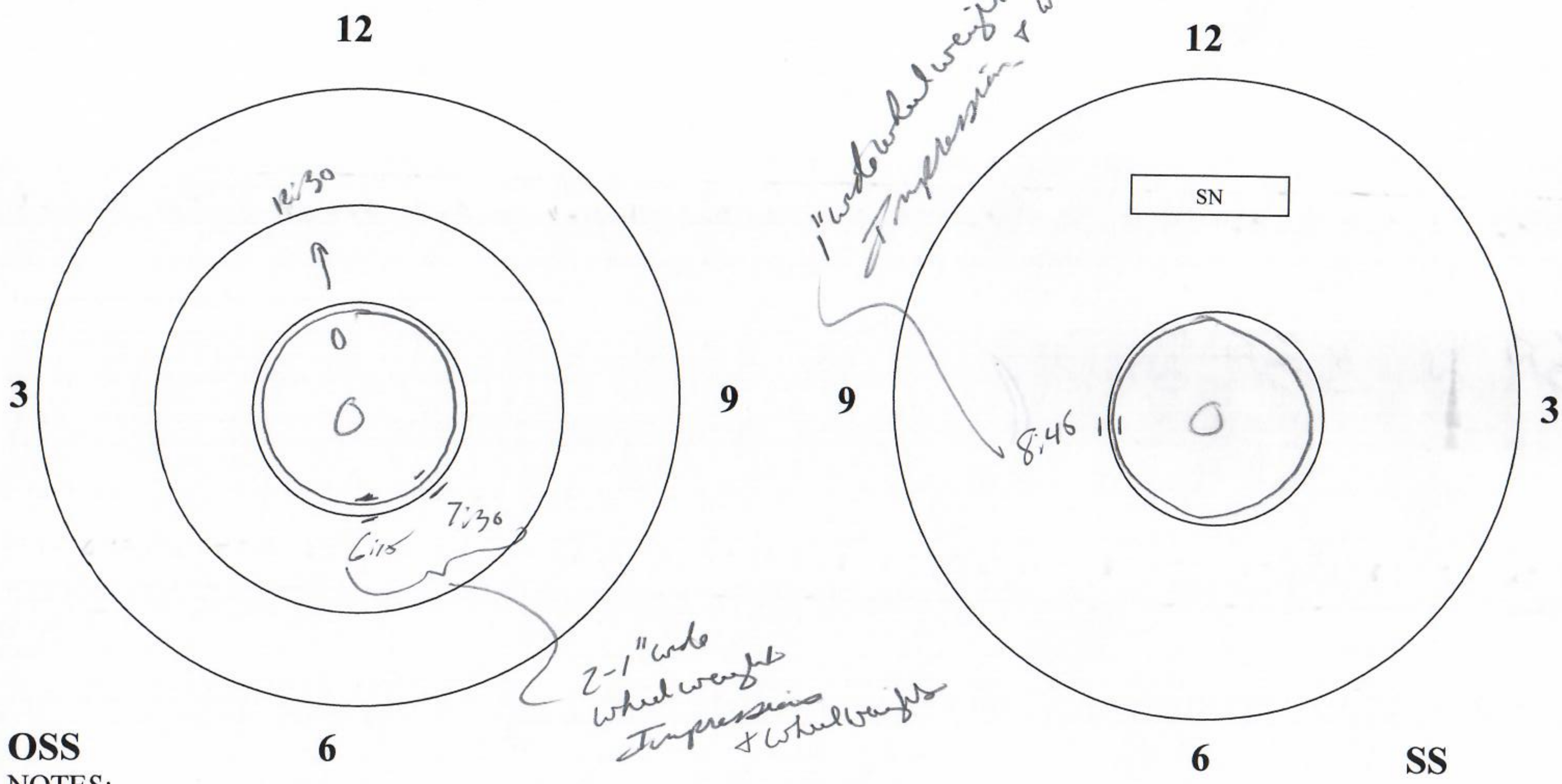
LF COMPANION

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MDORNJAV234

SIZE: LT 235/85R16 MAS



NOTES:

1) Rim Line polishing & Grooving 360° on Both Sides of TWO.

2) Innerliner Sound

3) SS Sidewall Dirty.

RF COMPANION

TIRE EXAMINATION NOTES

LOCATION MATTHEWS, NC
TIRE SIZE LT235/85R16 MRS
CASE SUSMAN (LOVELAND)
TIRE NAME GOODYEAR WRANGLER HT
DATE 11/15/18
LOAD RANGE E
EXAMINER JOE GRANT
DOT MDOR NJHV 194
UTQG —
YEAR MANUFACTURED: 1994

TUBELESS, RADIAL

GENERAL DESCRIPTION:

MOUNTED ON RIM? RIM SEPARATE
INFLATION PRESSURE NA
TIRE REMNANTS ONE TIRE

TIRE POSITION ON RIM RIM SEPARATE
AVERAGE TREAD DEPTH 8/32
SAFETY WARNING STAMPED ON BOTH SIDEWALLS

TIRE INFORMATION:

CONSTRUCTION (1+2, etc) 2+2
COLOR SIDEWALL BLACK
PLY MATERIAL POLYESTER (2)
BELT MATERIAL STEEL (2)
MOLD #'S 270279-GRF-65MM, 422R
SINGLE LOAD/INFL. 3042 lbs @80psi
DUAL LOAD/INFL 2778 lbs @ 80psi

RIM INFORMATION:

1) WORN POLISHED FLANGES

RIM MANUFACTURER —
RIM SIZE (Stamped or Measured?) 16 X 6.5 J
RIM DOT#/ID# 06 2502
NUMBER OF RIM PIECES ONE

VALVE INFORMATION:

VALVE MANUFACTURER DILL
VALVE TYPE TR600HP
VALVE CORE PRESENT YES
VALVE CAP PRESENT YES

RF COMPANION

TIRE EXAMINATION NOTES

CASE: MATTHEWS, NC

DOT: MDORNJHV194

SIZE: LT235/85R16 M+S

TREAD NOTES

SS

OSS

12:00 (0 degrees) - Out Board

1:00 (30 degrees) -

2:00 (60 degrees) -

3:00 (90 degrees) -

4:00 (120 degrees) -

5:00 (150 degrees) -

6:00 (180 degrees) - Shoulder Abrasion 360°

7:00 (210 degrees) -

8:00 (240 degrees) -

9:00 (270 degrees) -

10:00 (300 degrees) -

11:00 (330 degrees) -

12:00 (360 degrees) -

RF COMPANION

TIRE EXAMINATION NOTES

CASE: MATTHEWS, NC

DOT: MDORNJHVI94

SIZE: LT 235/85R16 MTS

TREAD GROOVE DEPTHS

OUTBOARD

SS	1	2	3	4		
12:00	7	8	8	9		
1:00						
2:00						
3:00	7	8	9	10		
4:00						
5:00						
6:00	7	8	8 1/2	9 1/2		
7:00						
8:00						
9:00	7	8	9	10		
10:00						
11:00						
AVE.	7	8	8 1/2 -	9 1/2 +		

1) Tread Hardness ~84 Shore A Durometer

2) A few Stones Embedded in Sipes

3) Some SS + OSS Tread Shoulder Rounding 360°

RF COMPANION

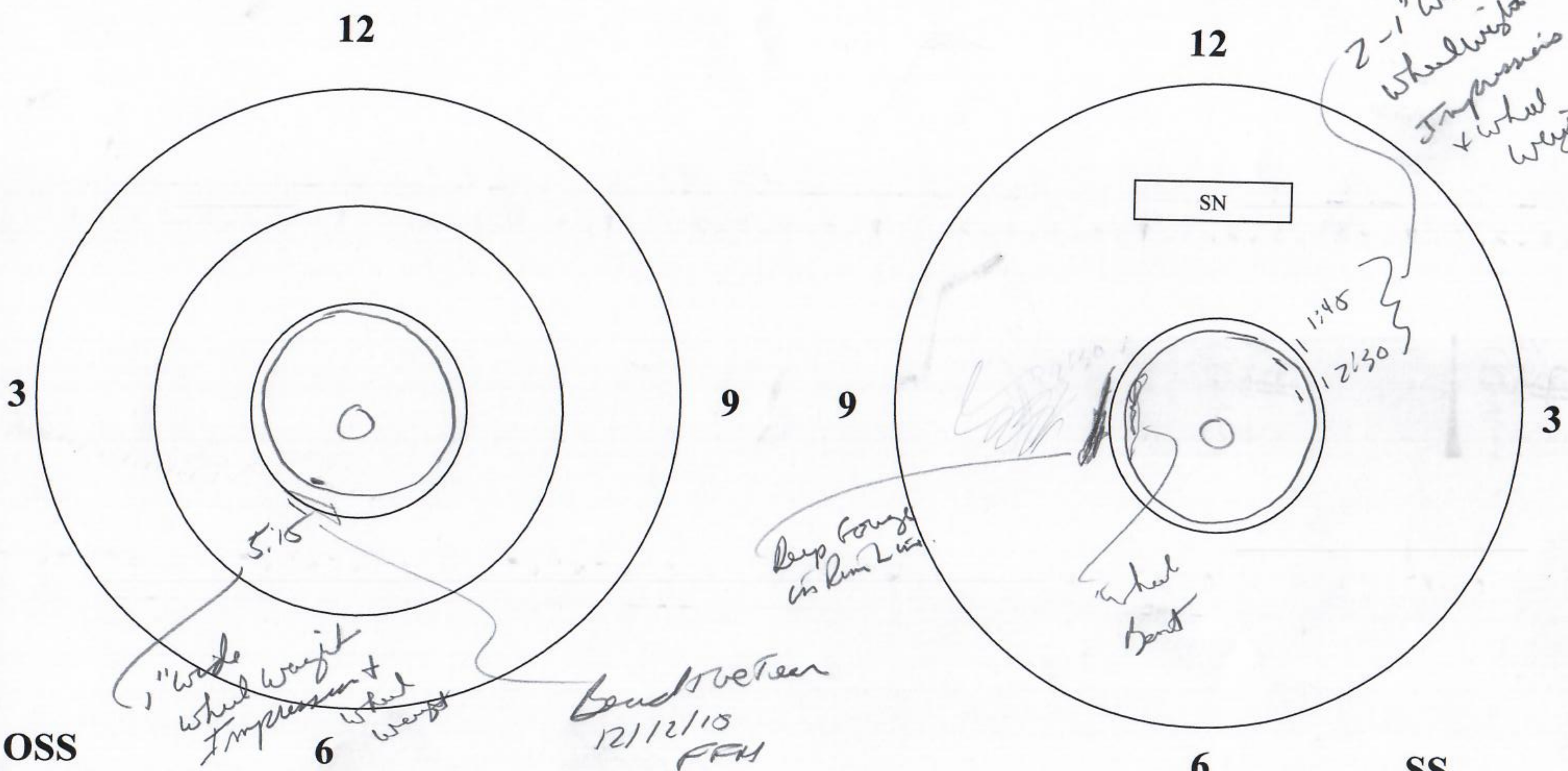
TIRE EXAMINATION NOTES

CASE: MATTHEWS, NC

DOT: MDORNJHV194

SIZE: LT235/85R16 M+S

Page 4 of 4



NOTES:

1) Rim Line Polishing to Grooving 360° on Both Sides of TWO.

2) Innerliner Sound.

3) SS Sidewall Dirty

LR COMPANION

TIRE EXAMINATION NOTES

LOCATION MATTHEWS, NC
TIRE SIZE LT235/85R16 M+S

CASE SUSMAN (LOVELAND)
TIRE NAME GOODYEAR WRANGLER HT

DATE 11/15/18
LOAD RANGE E

EXAMINER JOE GRANT
DOT MDOR NJHV Z34

UTQG —
YEAR MANUFACTURED: 1994

TUBELESS RADIAL

GENERAL DESCRIPTION:

MOUNTED ON RIM? RIM SEPARATE INFLATION PRESSURE N/A

TIRE REMNANTS ONE TIRE

TIRE POSITION ON RIM RIM SEPARATE, "1" MARKED ON OSS AT ~8:30

AVERAGE TREAD DEPTH 7.5/32

SAFETY WARNING STAMPED ON BOTH SIDEWALLS

TIRE INFORMATION:

CONSTRUCTION (1+2, etc) 2+2
COLOR SIDEWALL BLACK

PLY MATERIAL POLYESTER (2)
BELT MATERIAL STEEL (2)

MOLD #'S 4/9L, Z70276-6RF-65MM

SINGLE LOAD/INFL. 3042lbs @ 80psi
DUAL LOAD/INFL 2778lbs @ 80psi

1) WORN POLISHED FLANGES

RIM INFORMATION:

RIM MANUFACTURER —

RIM SIZE (Stamped or Measured?) 16x6.5J

RIM DOT#/ID# 06 2802
NUMBER OF RIM PIECES ONE

VALVE INFORMATION:

VALVE MANUFACTURER DILL
VALVE TYPE TR 600 HP

VALVE CORE PRESENT YES
VALVE CAP PRESENT YES

LR COMPANION

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MDORNJHV 234

SIZE: LT235/85R16 MTS

TREAD NOTES

SS

OSS

OUTBOARD

12:00 (0 degrees) -

1:00 (30 degrees) -

2:00 (60 degrees) -

3:00 (90 degrees) -

4:00 (120 degrees) -

5:00 (150 degrees) -

6:00 (180 degrees) -

7:00 (210 degrees) -

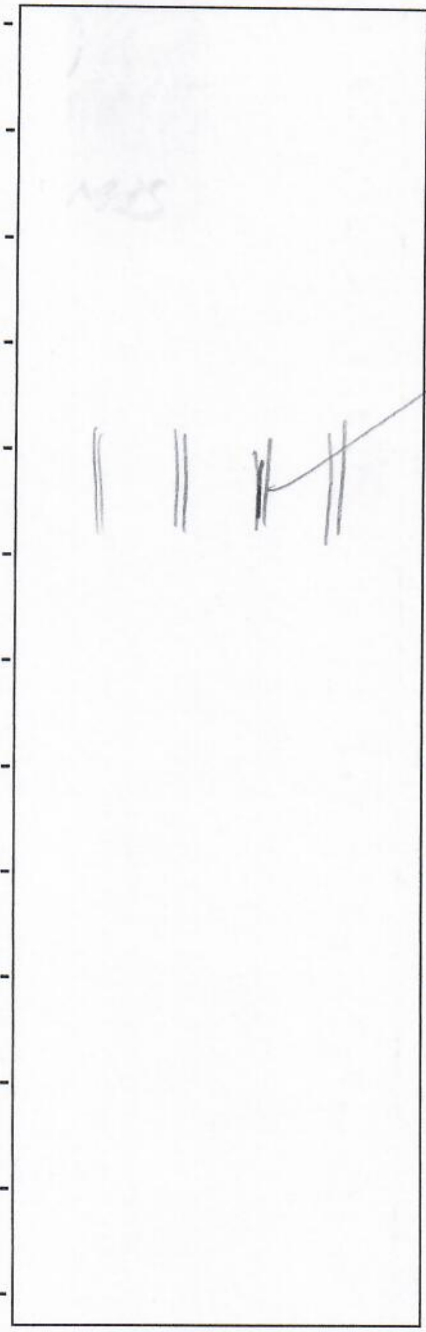
8:00 (240 degrees) -

9:00 (270 degrees) -

10:00 (300 degrees) -

11:00 (330 degrees) -

12:00 (360 degrees) -



4:00 - 4:30
~3" cuts bottom
of OSS intermediate
Tread Groove

LR COMPANION

TIRE EXAMINATION NOTES

CASE: SUSMAN (LOVELAND)

DOT: MIDORNJHV234

SIZE: LT235/85R16 M+S

TREAD GROOVE DEPTHS

ØSS OUTBOARD

SS	1	2	3	4		
12:00	8	7½	7½	8		
1:00						
2:00						
3:00	8	7½	7	8		
4:00						
5:00						
6:00	8	7	7½	8		
7:00						
8:00						
9:00	7	6	6	8		
10:00						
11:00						
AVE.	8	7	7	8		

1) Tread Hardness ~83 Shore A Durometer

2) A few Stones embedded in Sipes.

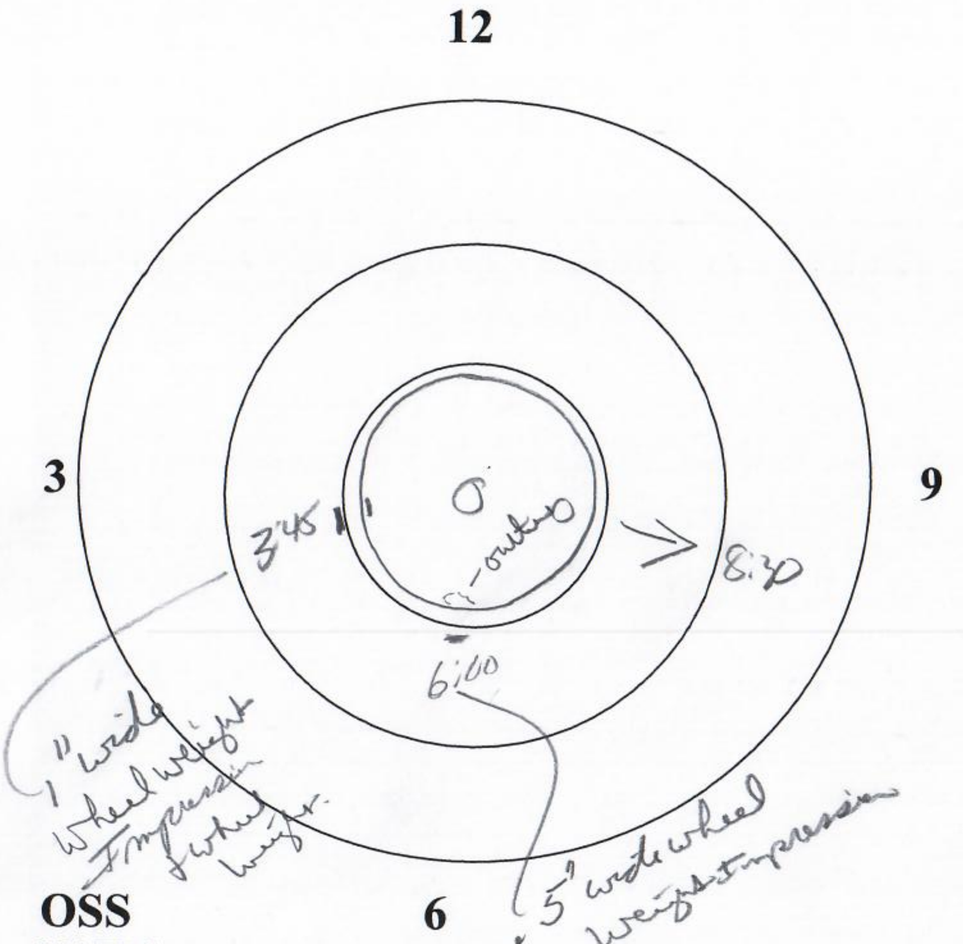
CASE: SUSMAN (LOVELAND) LR COMPANION

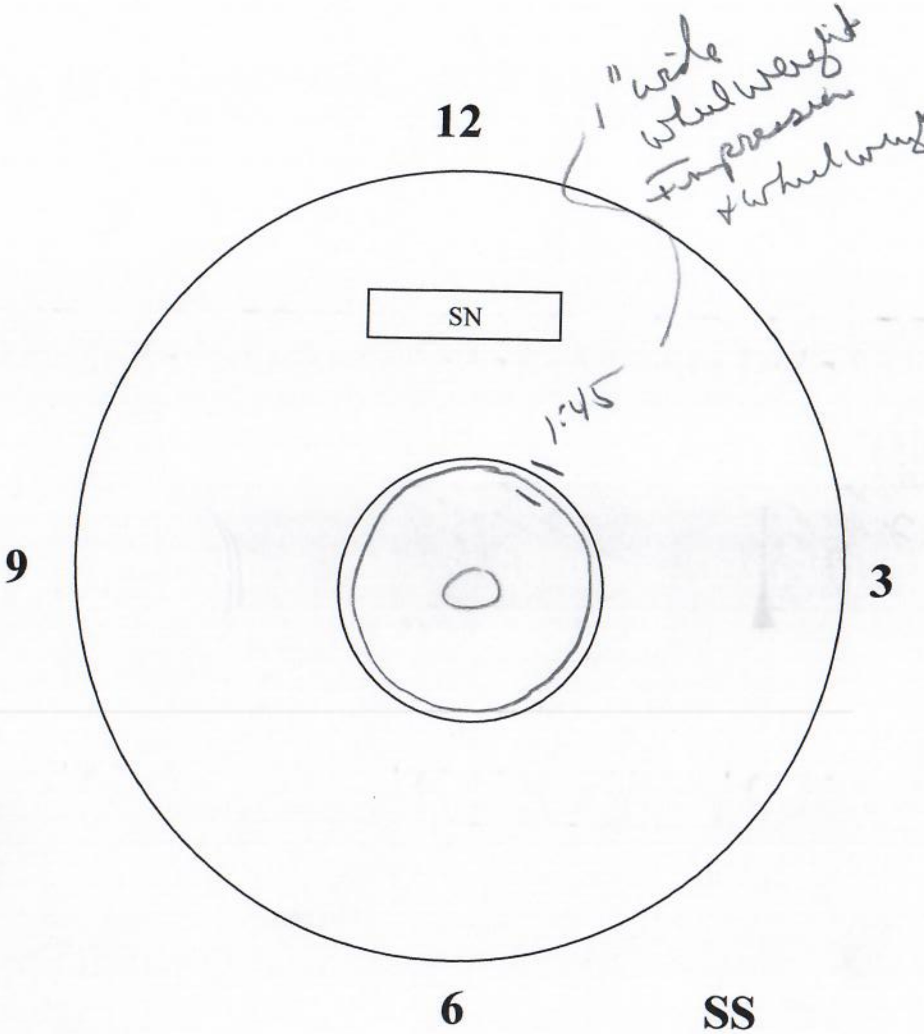
TIRE EXAMINATION NOTES

Page 4 of 4

DOT: MD ORNJHV234

SIZE: LT235/85R16 MHS





OSS

SS

NOTES:

1) Rim Line Polishing to Grooving 360° on Both Sides of Tire.

2) Innerliner Sound.

3) SS Sidewall Dirty

A list of case specific materials reviewed by Joseph L. Grant as of May 9, 2019 in the *Susman Loveland v. Goodyear* matter:

1. Subject Tire and Wheel;
2. Companion Tires and Wheels;
3. X-Rays of Subject and Companion Tires;
4. Shearography of Companion Tires;
5. NE State Patrol Report and Call History;
6. State of NE Investigator Motor Vehicle Accident Report;
7. Complaint
8. NE State Patrol Photos;
9. Deposition of Rysta Susman and Exhibit;
10. Deposition of Jacob Summers;
11. Deposition of Daniel T. Bueser and Exhibits;
12. Deposition of Larry Blair,
13. Southwell's Expert Report and Exhibits;
14. Southwell's File Materials;
15. Dandee Concrete Construction Company Documents;
16. Kearney Towing Documents;
17. Laux' Expert Report;
18. Deposition of David Roy Southwell and Exhibits;
19. Daws' Photos;
20. Gould Exhibit A;
21. Tyre Invoice 151;
22. NSP Scene Photos-C15-07916-Dandee Construction-5-01-15;
23. Photo Log – Subject Vehicle Inspection – Dandee Construction;
24. Photo Log – Tire Wheel Collection – A121365W00;
25. Susman_Protective Order;
26. GY_Susman Confidential Documents Produced.

CURRICULUM VITAE OF JOSEPH L. GRANT

PRESENT EMPLOYMENT: Independent Tire Analyst

HOME ADDRESS: 4201 Moss Creek Court
Matthews, North Carolina 28105
Phone 704 617 0336

EDUCATION: Bachelor of Science in Mechanical Engineering – June, 1971
Fenn College of Engineering, Cleveland State University

COURSES & SEMINARS:

- Tire Society Symposium
- Akron Rubber Group
- Clemson University Tire Industry Conference (October, 1985 and 1986)
- Monsanto Rubber Technology Seminar (May, 1989)
- SAE Motor Vehicle Accident Reconstruction and Cause Analysis (March, 1993)
- International Tire Exposition and Conference
- Northwestern University Traffic Institute Accident Investigation (March, 1997)
- STL Trans Tech Tire Technology Seminar – 1999

PROFESSIONAL ORGANIZATIONS:

- Society of Automotive Engineers
- Akron Rubber Group
- Rubber Manufacturers' Association
  Chairman - Truck Bus Tire
  Engineering Committee (1986-1992)
- Tire & Rim Association
- The Maintenance Council of the American Trucking Association
- American Society of Mechanical Engineers
- Tire Industry Association
- American Chemical Society

PUBLICATIONS:

1) *"What makes a High Performance Tire Different than a Regular Tire"*
   Jan. 1986 - Akron Rubber Group
   Oct. 1986 - Clemson University Tire Industry Conference
   April 1987 - American Retreading Association
2) *"Rim Line Grooves as an Indicator of Underinflated or Overloaded Tire Operation in Radial Tires"* September 2004 – ITEC
3) *"X-Ray Study of Sixty (60) Worn Out Passenger & Light Truck Tires"*
   September 2012 – ITEC
4) "*Typical Manufacturing Conditions in Steel Belted Radial Tires: Do They Influence Tire Durability" September 2016 - ITEC*
   Also Published – 2017 Tire Technology International Annual

PATENTS: Method of Forming Belted Radial Tires from a Cylindrical Tire Band (1977)

CURRICULUM VITAE OF
JOSEPH L. GRANT

EMPLOYMENT:	· June 1971 – Dec. 1994	The General Tire & Rubber Company
	· Jan., 1995 – April 2000	Continental General Tire, Inc.
	· May 2000 – Dec. 2005	Continental Tire, North America, Inc.
	· Jan. 2006 – Present	Independent Tire Analyst

POSITIONS:

• June, 1971 — Engineering Trainee, Tire Technology Department, Akron Tire Manufacturing Plant (Akron, Ohio).

• October, 1972 — Project Engineer, Advanced Tire Development.
Responsible for the Development of Advanced Concept Tire Products, including Fiberglass Belted Radial Passenger Tires and Advanced Bias Truck Tires (Akron, Ohio).

• October, 1978 — Manager, Bias Passenger Car Tire Engineering Technology.
Responsible for the Engineering Development Group for Bias Passenger Tires (Akron, Ohio)

• April, 1980 — Manager, Replacement and Private Brand Passenger Car Tire Engineering Technology.
Responsible for the Engineering Development Group for Bias and Radial Passenger Tires (Akron, Ohio).

• March, 1987 — Section Manager, Radial Truck Tire Engineering.
Responsible for the Engineering (Construction and Mold Design) Development Group for Radial Truck Tires (Akron, Ohio).

• September, 1988 — Director, Commercial Tire Technology.
Responsible for the Engineering (Construction and Mold Design) and Compound Development Groups for Commercial Products, including Bias and Radial Medium and Heavy Service Truck Tires and Giant, Farm and Industrial Tires (Akron, Ohio, September 1988 - March 1992) (Mt. Vernon, Illinois, April 1992 - December 1992).

• January, 1993 — Director, Product Analysis.
Responsible as company-wide consultant to assist other Departments on the subject of Tire Failure Analysis, Tire Performance Standards, and Safety Literature (Akron, Ohio, January 1993 - October, 1995) (Charlotte, North Carolina, November 1995 – January 2006).

• January, 2006 — Independent Tire Analyst

JOSEPH L. GRANT
4201 Moss Creek Court
Matthews, North Carolina 28105
(704) 617-0336

<u>Fee Schedule</u>

Hourly Rate	$ 375.00
Travel Fee (per hour)	$ 375.00
Travel Expenses Hotel, Air Travel (least expensive) Rental Car or Taxi (least expensive) Personal Car ($0.545/mile)	Cost

Travel time is portal to portal. Invoices are submitted at the conclusion of each significant segment of the work as the case progresses. A retainer may be required in certain circumstances.

TAX I.D. 282 40 6143 September 1, 2018

JOSEPH L. GRANT
DEPOSITION AND TRIAL LIST

NAME	VENUE	TRIAL	DEPO	LOCATION
Allen, Kimberly v Michelin	Arizona Mohave County Superior Court, Case No. CV2013-07176	15	15	Charlotte, NC Lake Havasu, AZ
Anderson v Cooper	State of South Carolina County of Spartanburg CA No.: 2015-CP-42-03764	-	17	Birmingham, AL
Below v YRC	US District Court Western District of Wisconsin CASE No.: 3:15-cv-00529-wmc	17	17	Charlotte, NC Madison, Wis.
Benedict v Hankook	District Court Eastern District of Virginia Richmond	18	17	Charlotte, NC
Bice, Karen v Cooper	Circuit Court Davidson County, Tennessee, Nashville CASE No. 15C2551	-	16	Charlotte, NC
Boehn v Deestone, Dunlap & Kyle	Arkansas Northern District CASE No. CV 2015-068 ND	-	16	Little Rock, AR
Bojorquez vs. Agfinity	New Mexico, County of Santa Fe, First District Court D-101-CV-2015-02061	17	17	Albuquerque, NM
Boyer v Hankook	State of North Carolina-Iredell County, Civil Action File No. 14-CVS-01873	-	17	Greenville, SC
Brown v Hankook	US District Court of Eastern District of OK, No. 6:14-cv-00109-RAW	-	15	Tulsa, OK
Cail, Danny vs Bridgestone	Circuit Court, Russell County, Alabama, Civil Action No. CV-2014-900080.00	-	16	Akron, Ohio
Carrillo vs Wal-Mart & The Goodyear Tire & Rubber Company	Superior Court of the State of California, County of san Bernardino Case No.: CIVDS1605889	-	18	Los Angeles, CA
Charcalla, Brenda v. Goodyear	US District Court, Western District of Pennsylvania Civil Action No.: 13-cv-00200204-JFC	-	15	Charlotte, NC
Chery v Bridgestone	State of North Carolina General Court of Justice Superior Court Division 16 CVS 5859	-	18	Charlotte, NC
Clarke vs. BATO, Gibson Tire, H. Sheppard, M Grantz	Sate of South Carolina, Clarrendon County CA	-	17	Charleston, SC

NAME	VENUE	TRIAL	DEPO	LOCATION
	No.:2014-CP-14-0432			
Cone/Frazier v Hankook	US District Court western District Tennessee No. 1:14-cv-0011	17	16	Charlotte, NC Jackson, TN
Danehower V Cooper Hearing	Circuit Court of St. Francis County, Arkansas No. 62cv-17-25-1	-	18	Arkansas
Dash vs Carolina Rides & Precision Tune Auto Care	State of South Carolina, County of Richland C/A No. 2015-CP-40-2339	-	16	Columbia, SC
De La Rosa v Ford/Cooper	New Mexico, Santa Fe County First Judicial District Court No: D-101-CV-2014-02574	-	17	San Antonio, TX
Diegelman v. Kawasaki Motors Corp	US District Court for the District of Maryland Case No. 1:16-CV-01173-MJG	-	18	Charlotte, NC
Dukes v Michelin et al.	19th Judicial Circuit Court, St. Lucie, Florida Case No. 12-CA-002094	16	16	Charlotte, NC
Ellison, Joel Alan vs Norman Earl Ashley and Salem Leasing	State of south Carolina, County of Anderson		19	Charlotte, NC
Evans v Cooper	State of California, County of LA, Case No. BC508861	-	17	Los Angeles, CA
Garcia, Porfirio vs Ford, Bridgestone, Socia Used Cars II	107th Judicial District Cameron County, Texas Cause No. 2012-DCL-5269-A	-	16	Akron, Ohio
Garza v MNA, et al.	District Court of Starr County, TX, 229 Judicial District, CA. No. DC-17-448	-	19	Austin, TX
Gooden v BATO, et al	Wyoming US District Court CA No. 15-cv-50	-	16	Akron, Ohio
Guerrero v Auto Nation	Probate Court, No. Two (2), Harris County, Texas	-	18	Houston, TX
Hageman vs. Sheridan	District Court of Platte County, Nebraska Case NO. CI 14-204	-	15	Charlotte, NC
Harris v YRC, et al	Circuit Court of St. Louis, Missouri Case No. 18SL-CC01749 Div. 5	-	19	Charlotte, NC
Hart-Gallimore v. Michelin	Circuit Court Miami-Dade County, Florida Case No.: 14-019298 CA-01	-	16	Atlanta, GA
Hartman v Hankook	Circuit Court, Lee County, FL	-	17	Charlotte, NC
Hartsock v. Goodyear Dunlop	US District Court, South Carolina Charleston Div. Case No.:2:13-cv-00419-PMD	-	15	Charlotte, NC
Herrera vs. Alamo Concrete, Michelin	County Court at law Number 3, Nueces County,	-	16	Austin, TX

NAME	VENUE	TRIAL	DEPO	LOCATION
	Texas, Cause No. 2014-CCV-61396-3			
Hofmann vs. Enterprise	State of Minnesota, Fourth Judicial District Court No. 27-CV-13-1995	-	16	Pittsburgh, PA
Holt v Goodyear	Superior Court of Arizona No. CV2013-004191	-	15	Los Angeles, CA
Jackson v MNA	Cause No. 10,603 287th Judicial District Court, Parmer County, TX	-	16	Austin, TX
Jackson v YCA & Canyon Tire	California State-San Bernardino, Case No. CIVDS1416256	18	17	Charlotte, NC, San Bernardino, CA
Jimenez, et al v. Con-Way Truckload	Nueces County Court, Texas Cause No. 2014-CCV-61239-1	-	16	San Antonio, TX
Kaur/Singh v Destination Anywhere	Superior Court of California, County of Santa Cruz. Case No. 17CV02758		18	Charlotte, NC
Kess vs. 4WS	State of Ohio, County of Cuyahoga No. CV 17 880029	-	18	Cleveland, Ohio
Kristensen v Goodyear	State of South Carolina, Fourteenth Judicial Circuit CA NO.: 2016-CP-15-1365	-	18	Charlotte, NC
Lacroix v Cooper	Fifteenth Judicial Court, Palm Beach County, Florida Case No.: 2013 CA 524 AO	-	15	Charlotte, NC
Linton, Sandra vs. Coca Cola	Circuit Court of Jefferson County, Alabama CA No. 68-CV-2016-900494	-	18	Birmingham, AL
Mahabirsingh vs Kumho	Fifth Judicial Circuit Marion County, FL. CA No.: 42-2014-0151-CA-B	-	16	Charlotte, NC
McCoy vs California Dept of Transportation	Superior Court of the State of CA. Ventura County Case No. 56-2014-00461883-CU-PO-VTA	16	16	Oxnard, CA
McKelvey vs. Hill Tire	State of South Carolina Dorchester County Case No. 2012-CP-18-1239	-	17	Charleston, SC
Medina vs. Michelin et al.	District Court of Dallas County, Texas, 134th Judicial District	-	16	Austin, TX
Morales v Tire Country	State of South Carolina County of Chesterfield CA No.: 2015-CP-13-641	-	18	Charlotte, NC
Morro v Colony Tire	State of South Carolina Fourteenth Judicial Circuit Caseno.: 2015-CP-15-434	-	17	Charlotte, NC
Murch v. Wal-Mart	United States District Court	-	18	Charlotte, NC

NAME	VENUE	TRIAL	DEPO	LOCATION
	District of Massachusetts – Worcester Division Civil Action No. 4:17-CV-40059			
Muszynski vs. Cooper	Eighteenth Judicial Circuit, Seminole County, Floridaa Case No. 11-CA-2755-10-K	-	15	Charlotte, NC
O'Donnell v. Cooper & Town Fair Tire Centers	State of Rhode Island Superior Court C.A. No. PC-10-6621	-	17	Charlotte, NC
Paz v Goodyear	Superior Court of State of Cal. Conty of LA No. BC512911	-	15(2)	Los Angeles, CAL.
Pechac v Goodyear	State of Arizona, Maricopa County CV2016-002829	-	18	LA, Cal.
Pfeiffer, Paula vs Bridgestone Retail	Circuit Court First Judicial Circuit, Santa Rosa County, Florida Case No.: 2014-CA-000067	-	16	Akron, Ohio
Ridyolph v PACCAR	Texas, Judicial District, 267th District Court, Cause No. 16-09-23,889	-	18	Charlotte, NC
Sanchez vs. Hankook	US District Court Nebraska Case No. 8:15-CV-00142-LSC-FG3	-	16	Charlotte, NC
Sanchez v 24th St Tires	US District Court, Douglas County Nebraska Case No. CI 13 6327	18	17	Charlotte, NC
Severino v Lazy Dau's RV Center & Goodyear	Circuit Court for the Thirteenth Judicial Circuit in and for Hillsborough County, Florida Case No; 12-CA-017948	-	15, 16	Charlotte, NC
Serrano-Campbell v Julio Martinez and Cooper	District Court of Ward County, Texas, 143rd Judicial District Court No: 14-02-23253-CVW	-	17	Houston, TX
Sleight v Rusty's	Second Judicial District Court of Weber County Ogden Department, State of Utah Case No. 110905721	-	15	Charlotte, NC
Snyder vs. Elaine Petroleum	Phillips County Circuit Court, Arkansas No. 54-CV-13-204	18	18	Charlotte, NC
Thompson v. Hankook	US District Court, Alabama Case No.: 2:14-cv-00295-CG-M	-	16	Birmingham, AL
Tondryk v BATO	District Court, Minnesota 09-CV-17-233	-	18	Akron, Ohio
Thomas vs. HT&W, Inc	17th Judicial District, Tarrant County, TX Cause No. 017-291484-17	-	18	Ft. Worth, TX
Valdez v MNA	District Court Hidalgo County, TX CAUSE NO.	-	15	Austin, Texas

NAME	VENUE	TRIAL	DEPO	LOCATION
	C-0869-13-B			
Vang, Pe Chi-A v. Cooper	Minnesota, District Court 27-CV-10-13554	15 Hearing	-	Birmingham, AL Minneapolis, MN
Westfield Ins v BATO	US District Court Northern District of WV, Clarksburg Division Case No. 1:14-cv-00055-IMK	-	15	Akron, Ohio
Wiese v Carlstar Group	Iowa District Court of Polk County Case No. LACL136284	-	18	Charlotte, NC
Witt v MNA	District Court, Parker, Texas CAUSE NO. CV14-1833	18	17	Houston, TX